

NOTES ON BROMELIACEAE, XXVI

Lyman B. Smith

ABROMEITIELLA

Unlike Mez (Pflanzenreich IV. 32: 278. 1935) and Castellanos (Gen. & Spec. Pl. Argent. 3: 186. 1945), I am unable to distinguish more than two species of Abromeitiella. Mez's distinction of a small number of leaf-spines for A. chlorantha collapses on examination of luxuriant live material like that of Marnier-Lapostolle, that shows great variation of leaf-spines on a single plant. Castellanos' detailed flower measurements for A. pulvinata do not hold either. For the present there seem to be two species distinguishable on leaves and possibly on sepals as follows, but that is not saying that further collections may not show this to be a monotypic genus with several varieties:

1. Leaves not over 22 mm long; sepals not over 13 mm long.
 Southern Bolivia, northwestern Argentina....1. A. brevifolia
 1. Leaves 50-150 mm long; sepals 16 mm long. Northwestern
 Argentina.....2. A. lorentziana

1. A. BREVIFOLIA (Griseb.) Castellanos, Anal. Mus. Nac. Hist. Buenos Aires 36: 371, pl. 2, 3, 6. 1931. Navia brevifolia Griseb. Symb. Argent. in Goett. Abh. 24: 332. 1879. Type: Lorentz & Hieronymus 947. Dyckia grisebachii Baker, Handb. Bromel. 130. 1889. Non Dyckia brevifolia Baker 1871. Tillandsia chlorantha Spegazzini, Com. Mus. Nac. Buenos Aires 1: 87. 1899. Type: Spegazzini s. n. Pitcairnia brevifolia (Griseb.) Fries, Nov. Act. Reg. Soc. Sci. Upsal. IV. 1, pt. 1: 73. 1905. Lindmania brevifolia (Griseb.) Hauman, Anal. Mus. Nac. Buenos Aires 29: 413, pl. 2, 3. 1917. L. chlorantha (Spegazzini) Hauman, op. c. 415. Pitcairnia chlorantha (Spegazzini) Castellanos, Com. Mus. Nac. Buenos Aires 2: 142. 1925. Abromeitiella pulvinata Mez in Mez, Bot. Archiv. 19: 460, fig. 1927. Type: Fiebrig in hort. Berlin. Meziothamnus brevifolius (Griseb.) Harms, Notizblatt 10: 576. 1929. Abromeitiella chlorantha (Spegazzini) Mez, Pflanzenreich IV. 32: 279. 1935. Pl. I, fig. 1: Leaf x 1.

2. A. LORENTZIANA (Mez) Castellanos, Lilloa 10: 459. 1944. Pitcairnia lorentziana Mez in DC. Mon. Phan. 9: 373. 1896. Type: Lorentz s. n. Hepetis lorentziana (Mez) Mez in op. c. 974. Abromeitiella abstrusa Castellanos, Anal. Mus. Nac. Hist. Nat. Buenos Aires 36: 369, pl. 1, 5. 1931. Type: Castellanos 29/60. Pl. I, fig. 2: Leaf x 1.

AECHMEA

AECHMEA MARIAE-REGINAE H. Wendl. Hamb. Gartenzeit. 19: 32. 1863 (staminate); Baker, Bot. Mag. 105: pl. 6441. 1879 (staminate); Möbbius, Gartenflora 49: 337, pl. 1477. 1900 (pistillate). Ae.

lalindei Linden & Rodigas ex Rodigas, Ill. Hort. 30: 45, pl. 481. 1883 (pistillate); Mez, Pflanzenreich IV. 32: 156. 1934; L. B. Smith, N. Am. Fl. 19: 206. 1938. Ae. gigas E. Morr. ex C. H. Wright, Bot. Mag. 132: pl. 8107. 1906 (pistillate).

Belatedly I make the synonymy indicated by the fact that Aechmea mariae-reginae is dioecious as noted by C. H. Lankester (Bromel. Soc. Bull. 4: 29. 1954) so that the two sexes are easily mistaken for different species. The pistillate flower contains stamens but evidently they are not functional.

ANANAS

ANANAS LUCIDUS Mill. Gard. Dict. ed. 8. no. 4. 1768. Type: Dillenius, Hort. Elth. Ananas non aculeatus Pitta dictus Plum. Spec. (Cat. Pl. Amer.) 20. 1703. A. lucide virens, folio vix serrato Dill. Hort. Elth. 25, pl. 21, fig. 22. 1732. Bromelia ananas var. δ . L. Sp. Pl. 285. 1753. Ananas erectifolius L. B. Smith, Bot. Mus. Leaflets, Harvard 7: 78, pl. 1. 1939; in J. L. Collins, The Pineapple 30, 31, 102, 104. 1960.

What I had supposed to be an Amazonian endemic, was already in the West Indies by the time of Plumier. Whether it was native there or brought by the Indians is uncertain, although probably the latter case.

BROMELIA

So many additions and corrections in the taxonomy and nomenclature of Bromelia have been discovered recently that this seems an appropriate time to summarize them in a brief revision.

1. Branches of the inflorescence distinct; flowers racemose.
2. Sepals broad, not more than 3 times as long as wide, 6-20 mm long.
3. Branches 13-24 cm long; inflorescence very lax, broadly pyramidal; pedicels 5-15 mm long, equaling or exceeding the floral bracts.
4. Inflorescence completely glabrous. Southern Bolivia, Paraguay, northwestern Argentina.....1. B. hieronymii
4. Inflorescence densely white-lepidote. Brazil: Rio de Janeiro.....2. B. binotii
3. Branches much shorter, rarely to 8 cm long (B. chrysantha), mostly erect or suberect; inflorescence mostly dense or subdense, narrow or short.
5. Inflorescence long, long-scapose, or mostly both.
6. Sepals narrowed from near the base, ovate or triangular.
7. Sepals 6 mm long, ecarinate. Brazil: Goiás.
3. B. irwini
7. Sepals 10-15 mm long, carinate.
8. Petals to 35 mm long, twice as long as the sepals. Northeastern Brazil.....4. B. laciniosa
8. Petals 15-16 mm long, only a little longer than the sepals.

9. Sepals acuminate; inflorescence subglobose. Brazil:
Goiás.....5. B. reversacantha
9. Sepals broadly acute; inflorescence laxly cylindrical.
Brazil: Bahia.....6. B. arenaria
6. Sepals narrowed from the middle or above or oblong.
10. Sepals ecarinate, mucicous. Southern Brazil, Uruguay.
7. B. antiacantha
10. Sepals carinate.
11. Petal-blades erect, purple; sepals mucicous. Brazil,
Paraguay, Argentina.....8. B. balansae
11. Petal-blades spreading, yellow; sepals mucronate.
12. Inflorescence densely and persistently brown-lepidote.
Trinidad, Venezuela, Colombia, Ecuador.
9. B. chrysantha
12. Inflorescence pale-brown-lepidote, soon glabrous.
Mexico.....10. B. palmeri
5. Inflorescence densely ellipsoid to subglobose, short-
scape. Brazil: Minas Gerais.....11. B. regnellii
2. Sepals narrow, ⁴ or more times as long as broad.
13. Inflorescence white-lepidote, mostly 2 or more times longer
than broad.
14. Sepals not prominently keeled, broadly convex to nearly
flat.
15. Floral bracts subulate; petals densely tomentose at apex;
sepals narrowly triangular, 6-10 times as long as wide;
fruit verrucose. West Indies and Mexico to Guiana and
Ecuador.....12. B. pinguin
15. Floral bracts broader; petals glabrous; sepals broader.
16. Floral bracts triangular; sepals straight. Mexico to
Honduras.....13. B. alsodes
16. Floral bracts oblong, obtuse; sepals cucullate. Brazil:
Maranhão.....14. B. eitenorum
14. Sepals prominently keeled, more or less conduplicate.
17. Branches of the inflorescence spreading; inflorescence
sublax, pyramidal. Brazil: Mato Grosso.
15. B. sylvicola
17. Branches of the inflorescence erect; inflorescence dense-
ly cylindrical or ellipsoid. Brazil, Paraguay, Argentina
8. B. balansae
13. Inflorescence brown-lepidote.
18. Sepals free.
19. Floral bracts much shorter than the ovary; leaf-blades
narrowed toward base but not truly petiolate. French
Guiana.....16. B. agavifolia
19. Floral bracts from about equaling to much exceeding the
ovary.
20. Pedicels slender, 10-12 mm long; inflorescence cylindrical
or subcylindrical; sepals cucullate. Venezuela, Brazil:
Pará.....17. B. goeldiana
20. Pedicels short but distinct; inflorescence densely capi-
tiform; sepals acute. Perú: San Martín.
18. B. poeppigii

18. Sepals irregularly high-connate; flowers lax, secund.
Brazil: Amazonas.....19. B. epiphytica
1. Branches of the inflorescence abortive or the inflorescence simple (B. urbaniana); flowers fasciculate, all but their apices covered by the bracts.
21. Scape-bracts lax and exposing much of the scape. Brazil (?)
20. B. redoutei
21. Scape-bracts densely imbricate and wholly concealing the scape or the scape lacking.
22. Inflorescence compound; sepals muticous.
23. Indument of the inflorescence white; leaf-blades neither constricted nor dilated at base; floral bracts equaling or exceeding the ovaries.
24. Sepals ecarinate, broadly convex to nearly flat, 15 mm long; inflorescence subcylindric. Brazil: Maranhão.
14. B. eitenorum
24. Sepals carinate, more or less conduplicate.
25. Floral bracts linear to elliptic-oblong, not dilated at apex.
26. Scape present but sometimes covered by the leaf-sheaths
27. Sepals straight, acuminate, serrulate toward apex, 25-30 mm long. Brazil: Para.....21. B. legrellae
27. Sepals rounded or truncate, cucullate.
28. Inflorescence longer than broad; scape relatively long.
29. Inflorescence 7-9 cm thick; sepals mostly 20 mm long; filament-tube to 10 mm long. Brazil, Paraguay, Argentina.....8. B. balansae
29. Inflorescence 4 cm thick; sepals 12-15 (-20) mm long; filament-tube 5 mm long. Brazil: Goiás, Mato Grosso, São Paulo.....22. B. interior
28. Inflorescence globose or subcorymbose.
30. Sepals 30 mm long; filament-tube ca 18 mm long. Brazil: Goiás.....23. B. goyazensis
30. Sepals 15-20 mm long; filament-tube 5-6 mm long.
31. Flowers 50 mm long. Argentina, Bolivia, Paraguay, Brazil.....24. B. serra
31. Flowers 30 mm long. Brazil: Goiás.
25. B. glaziovii
26. Scape wholly lacking.
32. Sepals oblong, 20-25 mm long. Trinidad, Venezuela.
26. B. humilis
32. Sepals elliptic, 15 mm long. Brazil: Goiás.
27. B. macedoi
25. Floral bracts dilated at apex.
33. Inflorescence on a distinct scape; sepals 20-22 mm long
34. Plant 2-3 m high; scape exerted above the leaf-sheaths. Brazil: Amazonas.....28. B. rondoniana
34. Plant 12 cm high; scape included in the leaf-sheaths. Brazil: Ceará.....29. B. auriculata
33. Inflorescence sessile; sepals 12 mm long. Brazil; Goiás.....30. B. exigua

23. Indument of the inflorescence some shade of brown.
35. Leaf-blade regularly narrowed from base to apex, linear-triangular.
36. Scape evident; sepals 14-24 mm long.
37. Floral bracts shorter than the ovary, entire; sepals 15 mm long. Brazil: Minas Gerais.....11. B. regnellii
37. Floral bracts exceeding the ovary, entire to lacinate-serrulate.
38. Inflorescence longer than wide, its indument very fine and filamentous. Brazil, Paraguay, Argentina.
8. B. balansae
38. Inflorescence globose or with a very broad apex, its indument coarse and ribbon-shaped.
39. Sepals obovate-oblong, broadly rounded, 20 mm long; floral bracts sublaciniate. Brazil: Minas Gerais, São Paulo.....31. B. lindmanii
39. Sepals oblong, acute, 25 mm long; floral bracts entire. Mexico, Central America.
32. B. hemispherica
36. Scape very short and hidden by the leaf-sheaths or completely lacking.
40. Indument of the inflorescence composed of very finely filamentous-divided scales.
41. Floral bracts shorter than the sepals. Perú: Loreto.
33. B. tarapotina
41. Floral bracts exceeding the sepals. Perú: San Martín.
18. B. poeppigii
40. Indument of the inflorescence composed of flat ribbon-like scales.
42. Sepals serrulate, 33 mm long. Colombia.
34. B. trianae
42. Sepals entire.
43. Sepals not over 17 mm long, oblong; indument pale. Brazil: Goiás, Mato Grosso.....35. B. villosa
43. Sepals 22-40 mm long.
44. Sepals cucullate, lance-oblong, 22 mm long, thin. Colombia.....36. B. fragilis
44. Sepals straight or nearly so, 25-40 mm long, coriaceous.
45. Sepals broadly elliptic, obtuse, soon glabrous; floral bracts greatly dilated at apex. Jamaica.
37. B. superba
45. Sepals narrowly oblong, acute or subacute, persistently dark-lepidote; floral bracts slightly dilated at apex.
46. Floral bracts narrowly obovate, widest well above the middle.
47. Floral bracts equaling or exceeding the sepals. Origin unknown.....38. B. grandiflora
47. Floral bracts distinctly exceeded by the sepals.
48. Ovary 2 cm long; sepals 25-27 mm long. Brazil: Bahia.....39. B. lagopus

48. Ovary to 8 cm long; sepals 30-40 mm long.
Mexico and the West Indies to Colombia and
Brazil.....40. B. plumieri
46. Floral bracts linear or narrowly lanceolate;
petals less than half connate. Colombia.
41. B. nidus-puellae
35. Leaf-blade either dilated or contracted at base, not
regularly triangular.
49. Leaf-blade abruptly dilated at base. Suriname.
42. B. fosteriana
49. Leaf-blade not dilated at base.
50. Leaf-blade abruptly contracted at base into a distinct
channeled petiole. Brazil: Pará.
51. Sepals free, linear, apiculate, 15 mm long, 3 mm wide;
petals glabrous, short-connate.....43. B. scarlatina
51. Sepals connate, oblong, obtuse, cucullate, 21 mm long,
7 mm wide; petals dark-lepidote, connate for 3/4 of
their length.....44. B. morreniana
50. Leaf-blades gradually contracted toward base, not truly
petiolate.
52. Sepals free.
53. Floral bracts much shorter than the ovary; scape
short and covered by the leaf-sheaths; pedicels
very short. French Guiana.....16. B. agavifolia
53. Floral bracts equaling or exceeding the ovary; scape
evident.
54. Pedicels obscure. Suriname.....45. B. alta
54. Pedicels slender, 10-12 mm long. Brazil: Pará.
55. Inflorescence cylindric, the lower fascicles
stipitate.....17. B. goeldiana
55. Inflorescence subglobose, the fascicles sessile or
nearly so.....46. B. oliveirae
52. Sepals irregularly high-connate, serrate at apex.
Venezuela: Amazonas.....47. B. tubulosa
22. Inflorescence simple; sepals spinose-mucronate.
Northwestern Argentina.....48. B. urbaniana

1. B. HIERONYMII Mez in Mart. Fl. Bras. 3, pt. 3: 199. 1891.
Type: Lorentz & Hieronymus s. n. Pl. I, fig. 3: Flower and bract
x 1.

2. B. BINOTII E. Morr. ex Mez in Mart. Fl. Bras. 3, pt. 3: 192
1891. Type: Binot s. n. B. fastuosa var. bergmannii Regel, Gar-
tenflora 15: 1, pl. 493. 1866. Type: Hort. St. Petersburg.

3. B. IRWINII L. B. Smith, sp. nov. A B. laciniosa Mart. ex
Schult., cui verisimiliter affinis, bracteis florigeris late
ovato-triangularibus brevioribusque, sepalis subduplo minoribus
ecarinatis differt.

PLANT flowering ca 75 cm high (! Irwin). LEAVES at least 37
cm long, not narrowed between sheath and blade; sheaths broadly
ovate-triangular, 4 cm wide, covered beneath with coarse oblong
brown scales; blades narrowly triangular, pungent, 17 mm wide,
covered with coarse appressed white scales, becoming glabrous

above, laxly serrate with antrorse and retrorse spines 3-4 mm long. SCAPE erect, 7 mm thick, covered with small finely divided crisped brown scales; scape-bracts erect and imbricate but narrow and exposing the scape, the lower subfoliaceous, the upper lance-ovate with a thick linear blade, rose-pink, subchartaceous when dry, covered beneath with appressed white scales. INFLORESCENCE laxly bipinnate, cylindric, 2 dm long, white-tomentulose with small finely divided scales; primary bracts like the upper scape-bracts but ovate, the lowest exceeding the flowers; branches short but distinct; floral bracts broadly ovate-triangular, several times shorter than the ovary; pedicels short and obscure. SEPALS free, ovate-triangular, obtuse, 6 mm long, ecarinate. PETALS imperfectly known; blades erect, ca 10 mm long. STAMENS with filament-tube 10 mm long. OVARY cylindric, 20 mm long, 2 mm thick. Pl. I, fig. 4: Primary bract and branch x 1; fig. 5: Sepal x 1.

BRAZIL: Goiás: Creek margin, among rocks, Chapada dos Veadeiros, ca 20 km west of Veadeiros, 14° S, 47° W, alt. 1000 m, 9 February 1966, H. S. Irwin et al. 12448 (NY, type).

4. B. LACINIOSA Mart. ex Schult. f. in R. & S. Syst. 7, pt. 2: 1278. 1830. Type: Martius 2228. B. antiacantha sensu Ant. Phyto-Icon. 32, pl. 20. 1884. Based on Hort. Vienna. Non Bertol. 1824. ? B. lanigera K. Koch ex Baker, Handb. Bromel. 26. 1889. Nomen. Pl. I, fig. 6: Flower x 1 (after Antoine).

5. B. REVERSACANTHA Mez in Mart. Fl. Bras. 3, pt. 3: 198. 1891. Type: Pohl 2205.

6. B. ARENARIA Ule, Bot. Jahrb. 42: 194. 1908. Type: Ule 7151. Pl. I, fig. 7: Flower x 1.

7. B. ANTIACANTHA Bertol. Virid. Bonon. 4. 1824; 4, Misc.: 6, pl. 1. 1844. B. acanga sensu Willd. Enum. Hort. Berol. 346. 1809 Based on: "Sp. Pl. ed. W. 2. p. 10." Non L. 1767. B. commeliniana de Vriese, Del. Sem. Hort. Amst. 1844 ex Hoev. & de Vriese, Tijdschr. 12: 49. 1845. Type: Hort. Amsterdam. B. sceptrum Fenzl ex Huegel, Endlicher Parad. Vindob. 1: fasc. 8, 9: pl. 8. 1844-60. Nomen. Agallostachys antiacantha (Bertol.) Beer, Bromel. 37. 1857. A. commeliniana (de Vriese) Beer, op. c. 39. Bromelia fastuosa sensu Regel, Gartenflora 15: 1. 1866. Based on Hort. St. Petersburg. Non Lindl. 1821. B. pinguin sensu Carr. Rev. Hortic. 53: 153, fig. 35-39. 1881. Based on Hort. Brest. Non L. 1753. ? Hechtia longifolia hort. ex Baker, Handb. Brom. 140. 1889. Pl. I, fig. 8: Flower and bract x 1.

8. B. BALANSAE Mez in Mart. Fl. Bras. 3, pt. 3: 191. 1891. Type: Balansa 608.

Forma BALANSAE. B. laciniosa sensu Baker, Handb. Brom. 26. 1889, in part as to following: Karatas guianensis hort. ex Baker, l. c., fide Mez in DC. Mon. Phan. 9: 31. 1896, as "Bromelia guianensis". Bromelia argentina Baker, Kew Bull. 194. 1892. Type: Stewart s. n. (Actually from Paraguay, not Argentina. Not a combination on Rhodostachys argentina which is based on a different type). Bromelia pinguin sensu Morong & Britton, Ann. N. Y. Acad. Sci. 7: 235. 1892. Based on Morong 341. Non L. 1753. B. serra sensu Mez, Bull. Herb. Boiss. II, 3: 1035. 1903. Based on

Hassler 283. Non Griseb. 1879. Pl. I, fig. 9: Flower and bract x 1.

Forma TRICOLOR M. B. Foster, forma nov. A forma balansae foliorum laminis pulchre palido-striatis differt.

B. balansae var. tricolor hort. ex M. B. Foster, Bromel. Soc. Bull. 15: 127. 1965. Nomen.

SOUTH AMERICA: Cultivated, Jardin Botanique "Les Cèdres", St-Jean-Cap-Ferrat, France, 1966, J. Marnier-Lapostolle s. n. (US, type).

9. B. CHRYSANTHA Jacq. Hort. Schoenbrunn. 1: 28, Pl. 55. 1797. Type: Description and plate. Agallostachys chrysantha (Jacq.) Beer, Brom. 38. 1857. Bromelia aurea Britton, Bull. Torrey Bot. Club 48: 328. 1921. Type: Britton et al. 2736. Pl. I, fig. 10: Flower and bract x 1.

10. B. PALMERI Mez in DC. Mon. Phan. 9: 40. 1896. Type: Palmer 1355. B. mucronata Mez, Bull. Herb. Boiss. II, 3: 131. 1903. Type: Langlasse 402-bis. Pl. I, fig. 11: Flower and bract x 1.

11. B. REGNELLII Mez in Mart. Fl. Bras. 3, pt. 3: 194, pl. 53. 1891. Type: Regnell III-285. B. pinguin sensu Lindm. Svensk. Akad. Handl. 24, no. 8: 22, pl. 8, fig. 1-8. 1891. Based on Regnell II-285. Pl. I, fig. 12: flower x 1 (after Mez).

12. B. PINGUIN L. Sp. Pl. 285. 1753. Type: Pinguin Dill., no Linnaean specimen found. Ananas americana sylvestris altera minor Pluk. Almag. Bot. Mant. 29, pl. 258. 1700. Pinguin Dill. Elth. 320, pl. 240, fig. 311. 1732. Bromelia foliis aculeatis, racemo laxo terminali L. Hort. Cliff. 129. 1737, in part, not as to Plumier reference. Ananas pinguin Trew, Ehret. pl. 51. 1750-53. Karatas pinguin Mill. Dict. ed. 8. 1768. Bromelia pinguin L. Mant. 362. 1771, error. ? B. sepiaria Hort. Lovan ex R. & S. Syst. 7, pt. 2: 1283. 1830. Nomen. ? B. acarna Thunb. ex R. & S. 1. c. Nomen. B. ignea Beer, Brom. 35, 160. 1857. Based on Ananas pinguin Trew. Agallostachys pinguin (L.) Beer, Brom. 36. 1857. Karatas pinguin Mill. ex Baker, Handb. Brom. 25. 1889. Nomen. K. plumieri Devan. ex Baker, 1. c. Nomen. Bromelia paraguayensis Baker, op. c. Nomen, based on Morren Icon. Pl. I, fig. 13: Flower and bract x 1.

13. B. ALSODES St. John, Taxon 14: 29. 1965. B. sylvestris Willd. ex Link, Enum. 1: 308. 1821. Type: Hort. Berlin. Non Burm. f. 1768. Agallostachys sylvestris (Willd. ex Link) Beer, Brom. 35. 1857. A. lanigera K. Koch ex Baker, Handb. Brom. 26. 1889, fide Mez, Pflanzenreich IV. 32: 34. 1934. Nomen. Pl. I, fig. 14: Flower and bract x 1.

14. B. EITENORUM L. B. Smith, Phytologia 13: 458, pl. 1, fig. 15, 16. 1966. Type: G. & L. T. Eiten 4312. Pl. I, fig. 15: Flower and bract x 1.

15. B. SYLVICOLA S. Moore, Trans. Linn. Soc. ser. II. 4: 490. 1895. Type: S. Moore 489. Pl. I, fig. 16: Flower and bract x 1.

16. B. AGAVIFOLIA Brongn. ex Houlet, Rev. Hort. 47: 247. 1875. Type: Hort. Paris. Karatas agavifolia (Brongn. ex Houlet) Devans. Rev. Hort. 50: 190. 1878. Bromelia agavoides Carr. Rev. Hort. 53: 31. 1881. Type: Hort. Mus. Paris.

17. *B. GOELDIANA* L. B. Smith, Bol. Mus. Paraense Emilio Goeldi n. ser. no. 1: 2, fig. g-j. 1958. Type: Ducke s. n. B. cachimbensis L. B. Smith, Phytologia 13: 149, pl. 7, fig. 6. 1966: Type: Bockermann 252. Pl. I, fig. 17: Sepal x 1.
18. *B. POEPPIGII* Mez in Mart. Fl. Bras. 3, pt. 3: 188. 1891. Type: Poeppig 1824.
19. *B. EPIPHYTICA* L. B. Smith, Bol. Mus. Paraense Emilio Goeldi (n. ser.) no. 12: 1, pl. 1961. Type: Fróes 33822. Pl. I, fig. 18: Sepals x 1.
20. *B. REDOUTEI* (Baker) L. B. Smith, Phytologia 13: 140. 1966. *B. karatas* var. caulescens Redouté, Lil. 8: pl. 457. 1816. Type: Description and plate. Karatas redoutei Baker, Handb. Brom. 3, 1889. Based on Redouté, Lil. 8: pl. 457. Bromelia caulescens Kuntze, Rev. Gen. 3, pt. 2: 302. 1898. Nomen, in synonym. Pl. I, fig. 19: Flower and bract x 1 (after Redouté).
21. *B. LEGRELLAE* (E. Morr.) Mez in Mart. Fl. Bras. 3, pt. 3: 189. 1891. *Karatas legrellae* E. Morr. Belg. Hort. 22: 129, pl. 11-13. 1872. Type: Hort. Linden. Pl. II, fig. 1: Floral bract x 1; fig. 2: Flower x 1 (after Belg. Hort.).
22. *B. INTERIOR* L. B. Smith, Smithsonian Misc. Coll. 126: 23, 176, fig. 80. 1955. Type: Macedo 3260. Pl. II, fig. 3: Flower x 1.
23. *B. GOYAZENSIS* Mez, Bot. Jahrb. 30, Beibl. 67: 2. 1901. Type: Glaziou 22190. B. balansae sensu L. B. Smith, Smithsonian Misc. Coll. 126: 175. 1955. In part, as to synonym.
24. *B. SERRA* Griseb. Symb. Argent. in Goett. Abh. 24: 328. 1879. Type: Lorentz & Hieronymus s. n.
Forma *SERRA. Rhodostachys argentina* Baker, Handb. Brom. 29. 1889. Type: Harman s. n. Leaf-blades concolorous. Pl. II, fig. 4: Flower and bract x 1 (after Castellanos).
Forma *VARIEGATA* (M. B. Foster) M. B. Foster ex L. B. Smith, stat. nov. *B. serra* var. variegata M. B. Foster, Bromel. Soc. Bull. 5: 61, fig. 1955. Leaf-blades white-striped.
25. *B. GLAZIOVII* Mez, Bot. Jahrb. 30, Beibl. 67: 1. 1901. Type: Glaziou 22189. Doubtfully distinct from *B. serra* Griseb.
26. *B. HUMILIS* Jacq. Enum. Vindob. App. 306. 1762; Ic. Pl. Rar. 1: pl. 60. 1784. Type: Hort. Vienna. B. karatas sensu HBK. Nov. Gen. & Sp. 1: 297. 1816. Based on Humboldt & Bonpland s. n. B. lasiantha Willd. ex Schult. f. as synonym. *Puya lanata* Schult. f. in R. & S. Syst. 7, pt. 2: 1233. 1830. *Nidularium humile* (Jacq.) Regel, Gartenflora 17: 69. 1868. *Karatas humilis* (Jacq.) E. Morr. Belg. Hort. 22: 131. 1872. *Madvigia humilis* Liebm. ex Ant. Phyto-Icon. 38. 1884. Nomen in synonym. *Bromelia lasiantha* Willd. ex Mez in DC. Mon. Phan. 9: 28. 1896. Type: Humboldt & Bonpland s. n. Karatas lasiantha (Willd. ex Mez) Harms, Pflanzenfam. ed. 2, 15a: 135..1930. Pl. II, fig. 5: Flower and bract x 1.
27. *B. MACEDOII* L. B. Smith, Bromel. Soc. Bull. 8: 12, fig. 1958. Type: Smith & Macedo 4826. Pl. II, fig. 6: Flower and bract x 1.
28. *B. RONDONIANA* L. B. Smith, Bol. Mus. Nac. Rio de Janeiro n. ser. no. 15: 1, fig. a, b. 1952. Type: Luetzelburg in Rondon

21278. Pl. II, fig. 7: Sepal x 1.

29. *B. AURICULATA* L. B. Smith, sp. nov. A *B. exigua* Mez, cui verisimiliter affinis, scapo brevi sed distincto, bractearum scapi atque primarium vaginis apice auriculatis, sepalis majoribus differt.

PLANT flowering only about 12 cm high. LEAVES to 7 dm long; sheaths broadly ovate, 3 cm long, castaneous, covered beneath toward apex with oblong brown retrorse-spreading scales, elsewhere glabrous, spinulose-serrate toward apex; blades linear, acuminate to a small rounded-apiculate apex, 8 mm wide, antrorsely serrate at base with spines 3 mm long, retrorsely above, sparsely pale-lepidote on both sides except at base where densely vestite like sheath. SCAPE to 4 cm long; scape-bracts narrowly obovate with large apical auricles, densely serrulate, thin, covered beneath with pale appressed scales, shorter than the flowers but their foliaceous blades much exceeding them. INFLORESCENCE densely corymbiform, 4-5 cm in diameter, pale-lepidote; primary bracts like the scape-bracts but with shorter blades; floral bracts subclavate with an elliptic-dilated thickened serrulate apex, exceeded by the sepals. FLOWERS obscurely short-pedicellate; sepals free, linear, 20 mm long, cucullate and serrulate at apex, conduplicate, somewhat glabrescent and contrasting with the ovary; petals narrowly ligulate without a distinct blade, pale-lepidote near apex; filament-tube 18 mm long; ovary slenderly cylindric, covered with fine pale spreading scales. Pl. II, fig. 8: Primary bract x 1/2; fig. 9: Floral bract x 1; fig. 10: Sepal x 1.

BRAZIL: CEARÁ: Grangeiro, taboleiros, 10 January 1934, Luetzelburg 25990 (M, type; phot. US).

30. *B. EXIGUA* Mez, Bot. Jahrb. 30, Beibl. 67: 2. 1901. Type: Glaziou 22192.

31. *B. LINDMANII* Mez in Mart. Fl. Bras. 3, pt. 3: 621. 1894. Karatas laciniosa Lindm. Svensk. Akad. Handl. 24, no. 8: 18, pl. 2, fig. 22-25. 1891. Type: Regnell III-1258. Non Bromelia laciniosa Mart. 1830. Pl. II, fig. 11: Floral bract x 1; fig. 12: Flower x 1; fig. 13: Sepal x 1 (after Lindman).

32. *B. HEMISPHERICA* Lam. Encycl. 1: 145. 1783. Mexocotl seu Manguei Hernandez, Nov. Pl. An. Min. Mex. 272. 1651. Aloë Americana fructu dulci & acido multiplici prunis simili Morison, Pl. Hist. 2: 418, sec. 4, pl. 22, fig. 7. 1715. Bromelia acanga L. Syst. Nat. ed. 12. 2: 232. 1767, as to above synonyms, but not as to type which is some species with a long inflorescence. *B. humilis* sensu Mez in DC. Mon. Phan. 9: 25, 1896, in part, as to above synonyms. *B. wercklei* Mez, Fedde Rep. Spec. Nov. 16: 2. 1919. *B. tejupilcana* Matuda, Anal. Inst. Biol. Mex. 27: 353, fig. 8, 9. 1957. Pl. II, fig. 14: Sepal (ventral) x 1.

The floral bracts would appear to be entire and not laciniate-serrate as Mez described those of *B. wercklei*. The primary bracts are laciniate-serrate and these must have been intended by Mez.

33. *B. TARAPOTINA* Ule, Verhandl. Bot. Ver. Brandenb. 48: 130. 1907. Type: Ule 6682.

34. *B. TRIANAE* Mez in Mart. Fl. Bras. 3, pt. 3: 623. 1894. Nomen; in DC. Mon. Phan. 9: 21. 1896. Type: Triana 542 (number 1300, cited by Mez in parentheses, is the number of the genus in the system used by Triana and not a collection number). Pl. II, fig. 15: Floral bract x 1; fig. 16: Flower x 1; fig. 17: Sepal x 1.
35. *B. VILLOSA* Mez, Bot. Jahrb. 30, Beibl. 67: 3. 1901. Type: Glaziou 22191. Pl. II, fig. 18: Sepal (ventral) x 1.
36. *B. FRAGILIS* L. B. Smith, Contr. U. S. Nat. Herb. 29: 285, fig. 10. 1949. Type: Foster & Smith 1469. Pl. II, fig. 19: Sepal x 1.
37. *B. SUPERBA* Mez, Symb. Ant. 2: 252. 1900. Type: Harris Jam. 5170. Pl. II, fig. 20: Flower and floral bract x 1.
38. *B. GRANDIFLORA* Mez, Fedde Rep. Spec. Nov. 16: 3. 1919. Type: Hort. Kamerun. Doubtfully distinct from B. plumieri (E. Morr.) L. B. Smith.
39. *B. LAGOPUS* Mez in Mart. Fl. Bras. 3, pt. 3: 188. 1891. Type: E. Morren s. n. Probably only a small form of B. plumieri (E. Morr.) L. B. Smith.
40. *B. PLUMIERI* (E. Morr.) L. B. Smith, comb. nov. Karatas plumieri E. Morr. Belg. Hort. 22: 131. 1872. Nom. nov. for Bromelia karatas L. in part, not as to type.
- Caraguata acanga Piso, Hist. Nat. Bras. 88. 1648. Karatas foliis altissimis angustissimis et aculeatis Plum. Gen. 10, pl. 33. 1703. Bromelia karatas L. Sp. Pl. 285. 1753, in part, as to questioned synonym above, not as to type described as {"...panícula diffusa"}; sensu Jacq. Hort. Vindob. 1: pl. 31, 32. 1770. B. nudicaulis var. β. caraguata Lam. Encycl. 1: 146. 1783. B. acaulis Stokes, Bot. Mat. Med. 2: 204. 1812, in part, as to description, but nomen illegitimum because of the inclusion of B. karatas L. in its synonymy. Nidularium karatas Lem. ex Griseb. Fl. Brit. W. Ind. 591. 1864, in part, as to description. Pl. II, fig. 21: Sepal (ventral) x 1.
- This common widespread species with a sessile densely corymbose inflorescence, has always gone under the name of Bromelia karatas L., although Linnaeus described it as having "panícula diffusa". He later tried to substitute the name, B. acanga, for the diffuse element in order to save B. karatas for the sessile but only succeeded in adding one more name to limbo. With the help of Dr. William T. Stearn of the British Museum, I also tried to salvage the old familiar name but had to agree with his conclusion that this course was impossible.
41. *B. NIDUS-PUELLAE* (André) André ex Mez in DC. Mon. Phan. 9: 22. 1896. Karatas nidus-puellae André, Enum. Bromél. 3. Dec. 13, 1888; Rev. Hort. 60:563. Dec. 16, 1888; Brom. Andr. 1, pl. 1. 1889. Pl. II, fig. 22: Floral bract x 1/2 (after André).
42. *B. FOSTERIANA* L. B. Smith, Act. Bot. Neerlandica 5: 91, fig. 2 d-g. 1956. Pl. II, fig. 23: Sepals (ventral) x 1.
43. *B. SCARLATINA* (hort. ex Herincq) E. Morr. Belg. Hort. 31: 164. 1881; Mez in Mart. Fl. Bras. 3, pt. 3: 187, pl. 52. 1891. Distiacanthus scarlatinus hort. ex Herincq, Hort. Français 246. 1869. Type: Hort. Paris. Disteganthus scarlatinus Nicholson,

Dict. Gard. 1: 485. 1885 (not a combination). Bromelia amazonica hort. ex Nicholson, l. c. Nomen. Karatas scarlatina (hort. ex Herincq) Harms, Pflanzenfam. ed. 2, 15a: 135. 1930.

44. B. MORRENIANA (Regel) Mez in Mart. Fl. Bras. 3, pt. 3: 186. 1891. Cryptanthus morrenianus Regel, Gartenflora 37: 157. 1888. Type: Hort. St. Petersburg ex Hort. Liège. Disteganthus moensi hort. ex Regel, l. c. Nomen. Distiacanthus morrenianus (Regel) Baker, Handb. Brom. 14. 1889. Bromelia moensis E. Morr. ex Baker, l. c. Nomen.

45. B. ALTA L. B. Smith, Act. Bot. Neerlandica 5: 91, fig. 2 a-c. 1956. Type: Foster 2378. Pl. II, fig. 24: Sepal x 1.

46. B. OLIVEIRAE L. B. Smith, Phytologia 13: 149, pl. 7, fig. 7. 1966. Type: E. Oliveira 518. Pl. II, fig. 25: Sepal x 1.

47. B. TUBULOSA L. B. Smith, Mem. N. Y. Bot. Gard. 10, no. 5: 40, fig. 28. 1964. Type: Wurdack & Adderley 43525. Pl. II, fig. 26: Sepals x 1.

48. B. URBANIANA (Mez) L. B. Smith, comb. Nov. Rhodostachys urbaniana Mez in Mart. Fl. Bras. 3, pt. 3: 182, pl. 81. 1891. Deinacanthon urbanianum (Mez) Mez in DC. Mon. Phan. 9: 13. 1896; Castellanos, Gen. & Sp. Pl. Argent. 3: 154, pl. 28. 1945. Pl. III, fig. 1: Flower and bract x 1; fig. 2: Petals and stamens x 1 (after Castellanos).

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cachimbensis 17; caulescens 20; chrysantha 9; commeliniana 7.

eitenorum 14; epiphytica 19; exigua 30.

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ignea 12; interior 22; irwinii 3.

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"laciniosa" Baker 8; laciniosa Mart. 4; lagopus 39; lanigera 4; lasiantha 26; legrellae 21; lindmanii 31.

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APPENDIX

(Doubtful and excluded taxa)

- acanga L. Syst. Nat. ed. 12. 2: 232. 1767. Nomen illegitimum,
 because B. karatas included in its synonymy. An unsuccessful at-
 tempt by Linnaeus to save the name karatas for the species with a
 sessile inflorescence.
acanga sensu Schult. f. in R. & S. Syst. 7, pt. 2: 1281. 1830
 = ARAEOCOCCUS MICRANTHUS Brongn.
albo-bracteata Steud. in Lechler, Bearb. Am. Austr. 53. 1857.
 Nomen = FASCICULARIA BICOLOR (R. & P.) Mez
albo-rosea Lem. Ill. Hort. 2, Misc.: 64. 1855 = ? AECHMEA
PURPUREA-ROSEA (Hook.) Wawra.
amazonica hort. ex Andre, Rev. Hort. 58: 503. 1886. Nomen =
WITTROCKIA AMAZONICA (Baker) L. B. Smith.
ananas L. Sp. Pl. 285. 1753 = ANANAS COMOSUS (L.) Merrill.
angustifolia Baker, Handb. Brom. 4. 1889. Erroneously attri-
 buted to K. Koch = Billbergia angustifolia K. Koch = NEOREGELIA
CYANEA (Beer) L. B. Smith.
aquilega Salisb. Parad. pl. 40. 1806 = GRAVISIA AQUILEGA
 (Salisb.) Mez.
arvensis Vell. Fl. Fluminensis 130. 1825; Icon. 3: pl. 114.
 1835 = QUESNELIA ARVENSIS (Vell.) Mez.
aurantiaca Burchell ex Baker, Journ. Bot. 17: 231. 1879. Nomen
 = NIDULARIUM BURCHELLII (Baker) Mez.
bicolor R. & P. Fl. Per. 3: 33. 1802 = FASCICULARIA BICOLOR

(R. & P.) Mez.

blanda Schott ex Beer, Brom. 43. 1857 = *QUESNELIA BLANDA*
(Schott ex Beer) Mez.

bracteata sensu Ait. Hort. Kew. ed. 2, 2: 201. 1811. Non Sw.
1788 = *GRAVISIA AQUILEGA* (Salisb.) Mez.

bracteata Sw. Prodr. 56. 1788 = *AECHMEA BRACTEATA* (Sw.) Gris.
capituligera E. Morr. Belg. Hort. 29: 352. 1879. Incorrectly
attributed to Reichenb. = *GRAVISIA AQUILEGA* (Salisb.) Mez.

caratas Hill, Veg. Syst. 7: 19. 1764 = *BROMELIA KARATAS* L.

carnea Beer, Brom. 31. 1857 = *OCHAGAVIA CARNEA* (Beer) Smith &
Looser.

carolinae Beer, Brom. 29. 1857 = *NEOREGELIA CAROLINAE* (Beer)
L. B. Smith.

clandestina hort. ex Carr. Rev. Hort. 52: 256. 1880. Nomen =
GREIGIA SPHACELATA (R. & P.) Regel.

comata (Vell.) Beer, Brom. 34. 1857 = *Tillandsia comata* Vell.
= *AECHMEA* species.

communis Lam. Illustr. 2: pl. 223, fig. 1. 1793 = *ANANAS COMO-*
SUS (L.) Merrill.

comosa L. Herb. Amboin. 21. 1754; Amoen. Acad. 4: 130. 1759 =
ANANAS COMOSUS (L.) Merrill.

concentrica (Vell.) Beer, Brom. 29. 1857 = *NEOREGELIA CONCEN-*
TRICA (Vell.) L. B. Smith.

crassa Steud. in Lechler, Bearb. Am. Austr. 53. 1857. Nomen =
GREIGIA SPHACELATA (R. & P.) Regel.

cruenta R. Graham, Edinb. Phil. Journ. 174. 1828 = *NEOREGELIA*
CRUENTA (R. Graham) L. B. Smith.

daguensis Carr. Rev. Hort. 53: 230. 1881 = *AECHMEA GERMINYANA*
(Carr.) Baker.

denticulata K. Koch, Wochenschr. 2: 151. 1859 = *NEOREGELIA*
CYANEA (Beer) L. B. Smith.

desmetiana Baker, Bot. Mag. 120: pl. 7340. 1894. In synonym. =
HECHTIA DESMETIANA (Baker) Mez.

discolor Lindl. Bot. Reg. 24, Misc.: 48. 1838 = *GREIGIA SPHA-*
CELATA (R. & P.) Regel.

edulis Salisb. Prodr. 247. 1796 = *ANANAS COMOSUS* (L.) Merrill.

elegans hort. Hamburg ex R. & S. Syst. 7, pt. 2: 1238. 1830.
Nomen = ?

exsudans Lodd. Bot. Cab. 9: pl. 801. 1824 = *GRAVISIA AQUILEGA*
(Salisb.) Mez.

fastuosa Lindl. Collect. pl. 1. 1821. Identity dubious.
Possible equivalents are *B. laciniosa* Mart. ex Schult. f., *B. an-*
ticantha Bertol. and *B. alsodes* St. John. However, *B. fastuosa*
shows enough differences so that it might be a distinct species.

fernandae E. Morr. Ill. Hort. 18: 114, pl. 65. 1871 = *AECHMEA*
FERNANDAE (E. Morr.) Baker.

foliis margine dorsoque aculeatis, caule sulcato spinoso L.
Fl. Ceyl. 54. 1747 = *PANDANUS ODORATISSIMUS* L. f. (Pandaneaceae).

foliis radicalibus etc. Plum. Pl. Amer. ed. Burm. 52, pl. 63.
1755-60 = *PITCAIRNIA SPICATA* (Lam.) Mez

foliis serrato-spinosis etc. Plum. Pl. Amer. ed. Burm. 53, pl.
64, fig. 1. 1755-60 = *AECHMEA LINGULATA* (L.) Baker.

- foliis spinosis etc. L. Hort. Cliff. 127. 1737 = ANANAS COMOSUS (L.) Merrill.
- gigantea hort. ex R. & S. Syst. 7, pt. 2:1283. 1830. Nomen = ? AECHMEA NUDICAULIS (L.) Griseb.
- glabra Schult. f. in R. & S. Syst. 7, pt. 2: 1286. 1830 = ANANAS LUCIDUS Mill.
- glabra folio vix serrato Boerh. Ind. Alt. 2: 83. 1720 = ANANAS LUCIDUS Mill.
- hookeri Sweet, Hort. Brit. 425. 1826 = AECHMEA NUDICAULIS (L.) Griseb. var. CUSPIDATA Baker.
- incarnata R. & P. Fl. Peruv. 3: 32, pl. 255. 1802 = BILLBERGIA INCARNATA (R. & P.) Schult. f.
- inermis Steud. Nomencl. ed. 2, 1: 226. 1841 = ANANAS LUCIDUS Mill.
- iridifolia Nees & Mart. Nova Acta Acad. Leop. Carol. 11: 16. 1823 = BILLBERGIA IRIDIFOLIA (Nees & Mart.) Lindl.
- itatiaiaae Wawra, Oesterr. Bot. Zeitschr. 30: 114. 1880 = FERNSSEEA ITATIAIAE (Wawra) Baker.
- joinvillei E. Morr. Belg. Hort. 26: 161, pl. 10, 11. 1876 = FASCICULARIA PITCAIRNIIIFOLIA (Hort. Berlin ex Verlot) Mez.
- karatas L. Sp. Pl. 285. 1753, in part as to type, a species with "panicula diffusa". Identity wholly uncertain.
- laevis Hort. Carlsr. ex R. & S. Syst. 7, pt. 2: 1238. 1830. Nomen = BILLBERGIA AMOENA (Lodd.) Lindl.
- landbeckii Lechler ex Phil. Linnaea 33: 246. 1864-65 = GREIGIA LANDBECKII (Lechler ex Phil.) Phil.
- lanuginosa Beer, Brom. 32. 1857 = PUYA LANUGINOSA (R. & P.) Schult. f.
- latifolia Willd. ex Schult. f. in R. & S. Syst. 7, pt. 2: 1283. 1830 = AECHMEA LATIFOLIA (Willd. ex Schult. f.) Kl. ex Baker
- lindleyana Lem. Jard. Fleur. 3: pl. 223. 1852-53 = OCHAGAVIA CARNEA (Beer) Smith & Looser, ARAEOCOCCUS MICRANTHUS Brongn.
- lingulata L. Sp. Pl. 285. 1753 = AECHMEA LINGULATA (L.) Baker.
- linifera hort. ex Beer, Brom. 38. 1857. Nomen = NEOGLAZIOVIA VARIEGATA (Arr. Cam.) Mez.
- longifolia Lindl. in Paxton, Fl. Gard. 2: pl. 65. 1851 = OCHAGAVIA CARNEA (Beer) Smith & Looser.
- longifolia Rudge, Guyan. 1: 31, pl. 49. 1805 = STREPTOCALYX LONGIFOLIA (Rudge) Baker.
- longifolia Rich. Schomburgk, Reise 3: 903. 1848. Nomen = AECHMEA FERNANDAE (E. Morr.) Baker.
- longissima Posada, Estudios Cient. 241. 1909. Nomen subnudum = AECHMEA MAGDALENAE (André) André ex Baker.
- lucida Willd. Enum. 345. 1809 = ANANAS LUCIDUS Mill.
- lutea G. Meyer, Fl. Esseq. 145. 1818 = AECHMEA NUDICAULIS (L.) Griseb. var. CUSPIDATA Baker.
- macrodosa hort. ex E. Morr. Belg. Hort. 28: 140. 1878. Nomen = PSEUDANANAS SAGENARIUS (Arr. Cam.) Camargo.
- magdalenae (André) C. H. Wright, Kew Bull. 1923: 267. 1923 = AECHMEA MAGDALENAE (André) André ex Baker.
- marmorata Brongn. ex Baker, Handb. Brom. 11. 1889. Nomen =

NEOREGELIA MARMORATA (Baker) L. B. Sm th.

melanantha Ker, Bot. Reg. 9: pl. 766. 1824 = AECHMEA BROMELIIFOLIA (Rudge) Baker.

mertensii G. Meyer, Fl. Esseq. 144. 1818 = AECHMEA MERTENSII (G. Meyer) Schult. f.

mexicana Nois. ex R. & S. Syst. 7, pt. 2: 1238. 1830. Nomen = ?

muricata Arr. Cam. Diss. Pl. Brasil. 21. 1810 = AECHMEA MURICATA (Arr. Cam.) L. B. Smith.

nitens hort. ex Rev. Hort. 66: 118. 1894. Nomen = NIDULARIUM FULGENS Lem.

nudicaulis sensu Edwards, Bot. Reg. 3: pl. 203. 1817 = BILLBERGIA PYRAMIDALIS (Sims) Lindl. var. PYRAMIDALIS.

nudicaulis L. Sp. Pl. 286. 1753 = AECHMEA NUDICAULIS (L.) Griseb.

nudicaulis var. β. caraguata Lam. Encycl. 1: 146. 1783 = ? GRAVISIA AQUILEGA (Salisb.) Mez.

pallida Ker, Bot. Reg. 4: pl. 344. Dec. 1818 = BILLBERGIA AMOENA (Lodd.) Lindl. var. AMOENA.

paniculata Gmel. Syst. 2: 529. 1796 = AECHMEA PANICULIGERA (Sw.) Griseb.

paniculata Steud. Nomencl. ed. 2, 1: 226. 1840 = AECHMEA PANICULIGERA (Sw.) Griseb.

paniculigera sensu Reichenb. Icon. Exot. 3: 14, pl. 239, 240. 1827-30 = GRAVISIA AQUILEGA (Salisb.) Mez.

paniculigera Sw. Prodr. 56. 1788 = AECHMEA PANICULIGERA (Sw.) Griseb.

pauciflora K. Koch, Wochenschr. 9: 183. 1866 = NEOREGELIA CYANEA (Beer) L. B. Smith.

pearcei anonymous ex Baker, Handb. Brom. 13. 1889. Nomen = GREIGIA PEARCEI Mez.

perigrina Frag. & Cif. Bol. Real Soc. Españ. Hist. Nat. 25: 449. 1925. Nomen = ?

pitcairniifolia (Hort. Berlin ex Verlot) K. Koch, Wochenschr. 11: 325. 1868 = FASCICULARIA PITCAIRNIIFOLIA (Hort. Berlin ex Verlot) Mez.

pumila hort. ex Otto & Dietr. Allg. Gartenzeit. 4: 244. 1836. Nomen = CRYPTANTHUS ACAULIS (Lindl.) Beer var. ARGENTEUS Beer.

pyramidalis Sims, Bot. Mag. 42: pl. 1732. 1815 = BILLBERGIA PYRAMIDALIS (Sims) Lindl.

pyramidata (R. & P.) Beer, Brom. 34. 1857 = PUYA PYRAMIDATA (R. & P.) Schult. f.

pyramidata aculeis nigris etc. Plum. Gen. 46. 1703; Pl. Amer. ed. Burm. 51, pl. 62. 1756 = AECHMEA NUDICAULIS (L.) Griseb. var. NUDICAULIS.

pyramidata foliorum etc. Plum. ms. 5: pl. 59. fide Lam. = PITCAIRNIA SPICATA (Lam.) Mez.

ramosa et racemosa etc. Plum. Gen. 46. 1703 = AECHMEA LINGULATA (L.) Baker.

ramosissima fol. variegatis et circinatis Mez, Pflanzenreich IV. 32: 406. 1935. Error for Renealmia ramosissima etc. Plum. Gen. 27. 1703 = TILLANDSIA PANICULATA L.

rhodocincta Brongn. ex Baker, Handb. Brom. 11. 1889 = NEOREGELIA CAROLINAE (Beer) L. B. Smith, fide Mez as Aregelia.

rohaniana Walp. Anal. 6: 71. 1861. Erroneously attributed to de Vriese = BILLBERGIA VITTATA Brongn. ex Morel.

rubra hort. ex R. & S. Syst. 7, pt. 2: 1285. 1830. Nomen = ANANAS COMOSUS (L.) Merrill.

sagenaria Arr. Cam. Diss. Pl. Brasil. 13. 1810 = PSEUDANANAS SAGENARIUS (Arr. Cam.) Camargo.

semiserrata Willd. Enum. 345. 1809 = ANANAS COMOSUS (L.) Merrill form.

sessiliflora Lodd. ex Loud. Hort. Brit. 118. 1830 = CATOPSIS SESSILIFLORA (R. & P.) Mez.

silvestris Vell. Fl. Flum. 129. 1825; Icon. 3: pl. 113. 1835 = PSEUDANANAS SAGENARIUS (Arr. Cam.) Camargo.

silvestris, cf. also sylvestris.

sphacelata R. & P. Fl. Peruv. 3: 32. 1802 = GREIGIA SPHACELATA (R. & P.) Regel.

spicata Lam. Encycl. 1: 146. 1783 = PITCAIRNIA SPICATA (Lam.) Mez.

strobilina Beurl. Svensk. Vet Handl. 1854: 110. 1854 ("spicatum squamis.....distiche imbricatis") = AECHMEA species.

subspinosa Wendl. ex R. & S. Syst. 7, pt. 2: 1286. 1830 = ANANAS COMOSUS (L.) Merrill.

surinamensis Miq. Linnaea 18: 378. 1844 = GRAVISIA AQUILEGA (Salisb.) Mez.

sylvestris Burm. f. Fl. India 79. 1768 = PANDANUS ODORATISSIMUS L. f. (Pandanaeae).

thyrsiflora Willd. ex Schult. f. in R. & S. Syst. 7, pt. 2: 1282. 1830 = AECHMEA MERTEENSII (G. Meyer) Schult. f.

tinctoria Mart. ex Spix & Mart. Reise in Brasilien 2: 554. 1828 = AECHMEA BROMELIIFOLIA (Rudge) Baker.

tricolor hort. ex Gard. Chron. 43: 257. 1908 = BROMELIA species (sterile) and GUZMANIA MONOSTACHIA (L.) Rusby ex Mez, fide Mez, Pflanzenreich IV. 32: 35. 1934; 612. 1935.

tristis Beer, Brom. 30. 1857 = NEOREGELIA TRISTIS (Beer) L. B. Smith.

undulata hort. ex E. Morr. Belg. Hort. 28: 140. 1878. Nomen = PSEUDANANAS SAGENARIUS (Arr. Cam.) Camargo.

variegata Arr. Cam. Diss. Pl. Brasil. 7. 1810 = NEOGLAZIOVIA VARIEGATA (Arr. Cam.) Mez.

violacea hort. ex R. & S. Syst. 7, pt. 2: 1285. 1830 = ANANAS COMOSUS (L.) Merrill.

zebrina Herb. Bot. Mag. 53: pl. 2686. 1826 = BILLBERGIA ZEBRINA (Herb.) Lindl.

CATOPSIS

CATOPSIS PANICULATA E. Morr. in Makoy Cat. Hort. no. 121. Oct. 1883. C. pendula Baker, Handb. Brom. 155. 1889.

MEXICO: Sept. 1881, Morren Icon. (K, type of C. pendula Baker, and probably painted from the original plants of C. paniculata E. Morr.; phot. US).

I was able to verify the publication of Catopsis paniculata E. Morr. in the rich collection of old horticultural catalogues at the Jardin Botanique de l'Etat at Bruxelles. The reference includes an adequate description but no citation, so it is quite valid since the International Code bars publication in catalogues only after 1953 and without indication of type only after 1957.

GUZMANIA

GUZMANIA SQUARROSA (Mez & Sodiro) Sm. & Pitt. Journ. Wash. Acad. Sci. 43: 403. 1953. Thecophyllum squarrosum Mez & Sodiro, Bull. Herb. Boiss. II. 4: 877. 1904. Guzmania cryptantha L. B. Smith, Calsasia [1], no. 5: 6, fig. 2. 1942; Contr. U. S. Nat. Herb. 33: 225. 1957.

COLOMBIA: HUILA-CAQUETÁ: Gabinete, crest of the Cordillera Oriental, alt. 2300-2450 m, 22 March 1940, Cuatrecasas 8472 (US, type of Guzmania cryptantha L. B. Smith).

ECUADOR: "in silv. occident.", Pichincha, January 1901, Sodiro 47 (B, type of Thecophyllum squarrosum Mez & Sodiro; phot. US).

NEOREGELIA

Twenty years after Mez made his final revision of this genus as Aregelia in the "Pflanzenreich", I treated it in my "Bromeliaceae of Brazil" (Smithsonian Misc. Coll. 126: 144. 1955). However, in just a dozen years this treatment has become badly out of date. It is almost certain that more new species will be discovered in the next few years, but at least I can improve the understanding of those already known.

1. Petals connate; pedicels usually distinct (obscure in N. laevis) and making a sharp contrast with the base of the stout ovary. Eastern Brazil.....Subgenus NEOREGELIA
2. Inflorescence compound, its axes ferruginous-lepidote; floral bracts about equaling the sepals, serrulate; sepals 15 mm long. Rio de Janeiro.....1. N. fosteriana
2. Inflorescence simple.
 3. Inner leaves of the rosette evenly bright red, unlike the outer.
 4. Leaf-blades covered at least beneath with appressed cinereous scales; sepals acuminate.
 5. Leaf-blades about 15 mm wide; floral bracts serrulate. State (?).....2. N. pineliana
 5. Leaf-blades to 40 mm wide; floral bracts entire.
 6. Sepals to 38 mm long; pedicels to 30 mm long. Espirito Santo.....3. N. macrosepala
 6. Sepals 24-27 mm long; pedicels 5-16 mm long.
 7. Floral bracts and sepals red; pedicels 5 mm long, exceeding the inner floral bracts. Rio de Janeiro (! Mez), Santa Catarina (! Mez).....4. N. princeps
 7. Floral bracts and sepals green; pedicels to 15 mm long,

- shorter than the floral bracts. Espirito Santo, Rio de Janeiro.....5. N. farinosa
4. Leaf-blades sparsely and inconspicuously lepidote beneath, 25-35 mm wide; sepals rounded or acute.
8. Apex of leaf acute; inflorescence few-flowered. State (?)
6. N. olens
8. Apex of leaf semi-circular.
9. Leaf-blades with a prominent red apical spot; floral bracts only about equaling the ovary, obtuse.
Guanabara.....7. N. indecora
9. Leaf-blades concolorous; floral bracts nearly equaling the sepals.
10. Leaves 40-60 cm long, the blades strongly serrulate; sepals 21-28 mm long, connate for about one fourth of their length, rounded and apiculate. Rio de Janeiro, Guanabara.....8. N. caroliniae
10. Leaves to 26 cm long, the blades subentire; sepals 19 mm long, connate for more than half their length, acute. Rio de Janeiro.....9. N. compacta
3. Inner leaves like the outer, not evenly bright red.
11. Leaf-sheaths forming a cylindric or ellipsoid tank more or less constricted at summit; blades 15-25 mm wide, ligulate or narrowly triangular; stolons long and slender.
12. Blades (at least in part) very narrowly triangular, acuminate, 15 mm wide; sepals but slightly asymmetric.
13. Leaves to 70 cm long; blades very soon completely glabrous; sepals 26 mm long. Bahia.....10. N. wilsoniana
13. Leaves 30 cm or slightly longer; blades densely lepidote beneath; sepals 14 mm long. Rio de Janeiro.
11. N. abendrothae
12. Blades all ligulate with broad apiculate apices.
14. Leaves concolorous; sepals very broadly obtuse, 12 mm long. São Paulo.....12. N. hoehneana
14. Leaves variegated; sepals acute, 15-17 mm long; probably one variable species, N. ampullacea.
15. Petals 42 mm long; floral bracts 7 mm long; leaf-blades cross-banded, subdensely brown-punctulate beneath. Espirito Santo.....13. N. punctatissima
15. Petals 20-24 mm long.
16. Petal-blades with broad blue margins and white centers; leaf-blades cross-banded. Espirito Santo, Rio de Janeiro.....14. N. ampullacea
16. Petal-blades wholly white. Espirito Santo.
17. Floral bracts 20 mm long; leaf-blades brown-banded.
15. N. tigrina
17. Floral bracts 11 mm long; leaf-blades brown-spotted.
16. N. rubrifolia
11. Leaf-sheaths forming a more open tank; blades 10-70 mm wide, always ligulate.
18. Sepals 13-18 mm long; flowers about 30 mm long or less; plants small; leaves 18-35 (-60) cm long; blades 10-30 (-45) mm wide.

19. Leaf-blades densely and persistently appressed-lepidote on both sides, 20-30 mm wide.
20. Leaf-blades broadly retuse by the reflexing of the apex, concolorous; sepals strongly asymmetric, acuminate. Minas Gerais.....17. N. leprosa
20. Leaf-blades straight with the apex erect, more or less white-banded beneath.
21. Sepals acuminate, strongly asymmetric, red-purple; leaf-sheaths pale-spotted. Espirito Santo, Rio de Janeiro. 18. N. tristis
21. Sepals broadly rounded, obtuse or apiculate; leaf-sheaths obscurely spotted or concolorous.
22. Sepals subsymmetrical, apiculate. Rio de Janeiro. 19. N. fluminensis
22. Sepals strongly asymmetrical, obtuse. Espirito Santo. 20. N. simulans
19. Leaf-blades soon glabrous above or very obscurely punctulate.
23. Sheaths conspicuously pale-spotted; sepals obtuse. Rio de Janeiro.....21. N. chlorosticta
23. Sheaths concolorous.
24. Leaf-blades bicolorous with contrasting sides, densely lepidote beneath; sepals obtuse or broadly acute.
25. Blades finely purple-spotted, plicate at apex. Rio de Janeiro, São Paulo.....22. N. maculata
25. Blades not spotted nor plicate at apex.
26. Leaf-blades shorter than the sheaths, strongly purple-tinged, rounded-retuse. São Paulo...23. N. doeringiana
26. Leaf-blades much longer than the sheaths, not purple-tinged nor retuse.
27. Blades 10-20 mm wide, inconspicuously serrulate, strongly sulcate beneath with scales wholly within the grooves, apiculus slenderly subulate. Minas Gerais. 24. N. cyanea
27. Blades 20-32 mm wide, strongly serrulate, the scales completely covering the lower surface. Minas Gerais, Espirito Santo, Rio de Janeiro.....25. N. sarmentosa
24. Leaf-blades concolorous, glabrous or very obscurely punctulate on both sides.
28. Sepals acuminate.
29. Pedicels 20 mm long; leaves 4-5 dm long, the blades to 40 mm wide. Rio de Janeiro.....26. N. macahensis
29. Pedicels 5-7 mm long; leaves 2 dm long, the blades 24 mm wide. Espirito Santo.....27. N. albiflora
28. Sepals broadly rounded.
30. Ovary clavate; pedicels obscure, not over 3 mm long. Paraná, Santa Catarina.....28. N. laevis
30. Ovary ellipsoid; pedicels distinct, to 10 mm long. Espirito Santo.....29. N. brevifolia
18. Sepals 19-37 mm long; flowers about 40 mm or longer; plants large; leaves 15-70 cm long; blades 20-100 mm wide.
31. Leaf-sheaths variegated with either light or dark spots.
32. Blades to 75 mm wide, the apex with a prominent red spot

and stout black terminal spine. State (?).

30. N. johannis
32. Blades concolorous and with an inconspicuous terminal mucro.
33. Sheaths marbled with large pale spots on a dark ground; blade to 80 mm wide. São Paulo.....31. N. marmorata
33. Sheaths finely dark-spotted on light ground; blades 30 mm wide. Espirito Santo, Rio de Janeiro...32. N. margaritae
31. Leaf-sheaths concolorous or banded but not spotted, appressed-lepidote at least beneath.
34. Inflorescence few- (10-25-) flowered.
35. Leaf-blades with irregular purple bands on both sides, 2-3 times as long as the sheaths. Espirito Santo.
33. N. zonata
35. Leaf-blades concolorous or regularly white-banded beneath, less than twice as long as the sheaths.
36. Blades 50 mm wide, becoming retuse by the recession of the apex.
37. Pedicels 20 mm long; leaf-blades sparingly dark-spotted, laxly serrate with black teeth 1.5 mm long. Espirito Santo.....34. N. melanodonta
37. Pedicels 5 mm long; leaf-blades concolorous, green, subentire. Rio de Janeiro.....35. N. kuhlmannii
36. Blades 20-35 mm wide, rounded and apiculate, remaining straight.
38. Sepals to 34 mm long, acute; leaf-sheaths 1-3 times as long as the blades. Bahia, Minas Gerais, São Paulo.
36. N. bahiana
38. Sepals 20-24 mm long; leaf-sheaths shorter than to equaling the blades.
39. Leaf-blades with straight sides and strongly antrorse-uncinate spines; sepals acute. Minas Gerais.
37. N. oligantha
39. Leaf-blades with curved sides and nearly straight spines sepals acuminate. Espirito Santo....38. N. pauciflora
34. Inflorescence many-flowered, broad.
40. Leaves marked with a red spot at apex and strong transverse bands on the underside; floral bracts broad, acuminate, about equaling the subulate-acuminate sepals.
41. Blades banded on both sides; sepals straight, green; petal blades white. São Paulo.....39. N. binotii
41. Blades concolorous above; sepals uncinata, red; petals blue. Rio de Janeiro.....40. N. spectabilis
40. Leaves concolorous or purple-spotted at apex; floral bracts narrow, usually exceeded by the sepals.
42. Leaves cinereous throughout, a dense covering of coarse scales concealing the color. Espirito Santo.
41. N. seideliana
42. Leaves with color not obscured by scales.
43. Leaf-sheaths dark brown; sepals 33-34 mm long, slightly to one fourth exerted above the floral bracts.
44. Blades 55 mm wide, truncate with a soft apiculus that rapidly disintegrates; sepals free. State (?).

42. N. leucophoea
 44. Blades 30 mm wide, acute with a persistent terminal
 subulus 5 mm long; sepals connate for 5 mm. State (?)
43. N. uleana
 43. Leaf-sheaths green or purple.
45. Leaf-spines more than 7 mm long; sepals 37 mm long; floral
 bracts about equaling the center of the sepals;
 petals white. Espirito Santo, Guanabara.
44. N. carcharodon
 45. Leaf-spines not more than 4 mm long.
46. Floral bracts nearly or quite equaling the sepals, ob-
 tuse, cucullate; sepals acute, straight; leaf-spines
 red. Rio de Janeiro, Guanabara, São Paulo.
45. N. cruenta
 46. Floral bracts much exceeded by the sepals; sepals
 subulate-acuminate.
47. Leaf-blades subentire or minutely serrulate; pedicels
 ca 8 mm long. Rio de Janeiro (?)....46. N. coriacea
47. Leaf-blades with strong black spines to 4 mm long;
 pedicels 10-18 mm long. Rio de Janeiro, Guanabara.
47. N. concentrica
1. Petals free; pedicels obscure, merging with the slender ovary.
 Amazon Basin.....Subgenus AMAZONICAE

Subgenus NEOREGELIA

1. N. FOSTERIANA L. B. Smith, Arquiv. Bot. Estado S. Paulo n.
 ser. 2: 120, pl. 50. 1950. Type: Foster 123. Pl. III, fig. 3:
 Flower and bract x 1 (after Hoehne).

2. N. PINELIANA (Lem.) L. B. Smith, Contr. Gray Herb. 114: 5.
 1936.

Forma PINELIANA. Nidularium pinelianum Lem. Ill. Hort. 7,
 Misc.: 71. 1860. Type: Pinel in Hort. Ghent. Caraguata coerulea
Pinel ex Lem. l. c. Nomen. Karatas morreniana Ant. Phyto-Icon.
 pl. 35. 1884. Type: Plate (no text). Nidularium morrenianum
Hort. Makoy ex Baker, Handb. Bromel. 9. 1889. Nomen. Nidularium
guyanense Brongn. ex Baker, l. c. Nomen. Nidularium pulverulen-
tum E. Morr. ex Baker, l. c. Nomen. Regelia morreniana (Ant.)
Lindm. Oefvers. Vet. Akad. Förhandl. 47: 543. 1890. Aregelia
morreniana (Ant.) Mez in DC. Mon. Phan. 9: 72. 1896. Billbergia
mooreana Hort. de Cock, Cat. 5. 1910. Nomen (fide W. Robyns).
Nidularium mooreanum Hort. Haage & Schmidt, Cat. 211. 1912.
 Nomen (fide Mez). Neoregelia morreniana (Ant.) L. B. Smith,
 Contr. Gray Herb. 104: 79. 1934. Aregelia pineliana Mez,
 Pflanzenreich IV. 32: 40, fig. 12. 1934. Inflorescence normal.
 Pl. III, fig. 4: Floral bract x 1.

Forma PHYLLANTHIDEA (E. Morr. ex Baker) L. B. Smith, comb.
 nov. Karatas morreniana Ant. var. phyllanthidea E. Morr. ex
 Baker, Handb. Brom. 10. 1889. Type: Morren Icon. Aregelia
morreniana var. phyllanthidea (E. Morr. ex Baker) Mez in DC. Mon.
 Phan. 9: 79. 1896. Inflorescence changed to a tuft of enlarged

colored sterile bracts.

3. N. MACROSEPALA L. B. Smith, Smithsonian Misc. Coll. 126: 29 153, fig. 61. 1955. Type: Foster 968. Pl. III, fig. 5: Sepal x 1.

4. N. PRINCEPS (Baker) L. B. Smith, Contr. Gray Herb. 114: 5. 1936.

Forma PRINCEPS. ? Karatas meyendorffii Ant. Phyto-Icon. 54, pl. 32. 1884. In part, not as to basonym (fide Mez). ? Nidularium marichali Hort. Makoy ex Baker, Handb. Brom. 9. 1889. Nomen Karatas princeps Baker, op. c. 10. Type: Morren Icon. Nidularium princeps E. Morr. ex Baker, l. c. Nomen. Nidularium spectabile hort. ex Baker, l. c. Nomen. Non Moore. Regelia princeps (Baker) Lindm. Oefvers. Vet. Akad. Förhandl. 47: 543. 1890. erroneously ascribed to E. Morr. ? R. marechali Lindm. l. c. Nomen. Based on Nidularium marichali. Aregelia princeps (Baker) Mez in DC. Mon. Phan. 9: 75. 1896. Nidularium meyendorffii var. pruinoseum E. Morr. ex Mez, op. c. 76. Nomen. Based on Morr. Icon. Aregelia marechali Mez, Pflanzenreich IV. 32: 43. 1934. As to basonym, not as to material or description. Outer bracts of the inflorescence smaller than the inner leaves, bracteiform. Pl. III, fig. 6: Sepal x 1 (after Antoine).

Forma PHYLLANTHIDEA (Mez) L. B. Smith, comb. nov. Aregelia princeps var. phyllanthidea Mez in DC. Mon. Phan. 9: 76. 1896. Type: Description. Neoregelia princeps var. phyllanthidea (Mez) L. B. Smith, Smithsonian Misc. Coll. 126: 31. 1955. Outer bracts of the inflorescence enlarged and foliaceous but bright red. Described from cultivation, no surviving material known.

5. N. FARINOSA (Ule) L. B. Smith, Contr. Gray Herb. 124: 9. 1939. Nidularium farinosum Ule, Bericht. Deutsch. Bot. Gesellsch 18: 319. 1900. Type: Ule 4961. Aregelia farinosa (Ule) Mez, Pflanzenreich IV. 32: 42. 1934.

6. N. OLENS (Hook. f.) L. B. Smith, Contr. Gray Herb. 124: 10. 1939. Billbergia olens Hook. f. Bot. Mag. 91: pl. 5502. 1865. Type: Hort. Kew. Karatas olens (Hook. f.) Nicholson, Dict. Gard. 2: 216. 1885. Aregelia olens (Hook. f.) Mez, Pflanzenreich IV. 32: 42. 1934.

7. N. INDECORA (Mez) L. B. Smith, Contr. Gray Herb. 124: 9. 1939. Aregelia indecora Mez, Fedde Rep. Spec. Nov. 16: 3. 1919. Type: Ule 4134.

8. N. CAROLINAE (Beer) L. B. Smith, Contr. Gray Herb. 124: 9. 1939.

Forma CAROLINAE. Bromelia carolinae Beer, Brom. 29. 1857. Type: Hort. Berlin. Billbergia carolinae Hort. Van Houtte ex Beer, l. c. Nomen. Guzmania picta hort. ex Beer, l. c. Nomen. Billbergia meyendorffii (Regel) Regel, Gartenflora 8: 266, fig. 5-8. 1859. Karatas carolinae (Beer) Ant. Phyto-Icon. 52, pl. 31. 1884. K. meyendorffii (Regel) Ant. op. c. 54. As to basonym only. Nidularium carolinae Lem. ex Baker, Handb. Brom. 9. 1889. Nomen. Bromelia rhodocincta Brongn. ex Baker, op. c. 11 (fide Mez). Regelia meyendorffii (Regel) Lindm. Oefvers. Kgl. Vet. Akad. Förhandl. 47: 543. 1890 (combination not made by Lem. in 1860 as

- cited by Mez). Aregelia carolinae (Beer) Mez in DC. Mon. Phan. 9: 74. 1896. A. marechalii Mez, Pflanzenreich IV. 32: 43. 1934. Leaf-blades not striped. Pl. III, fig. 7: Sepal x 1.
- Forma TRICOLOR (M. B. Foster) M. B. Foster, comb. nov. N. carolinae var. tricolor M. B. Foster, Brom. Soc. Bull. 3: 29. 1953. Type: Foster 2831. Leaf-blades longitudinally striped white, rose and green.
9. N. COMPACTA (Mez) L. B. Smith, Contr. Gray Herb. 124: 9. 1939. Nidularium compactum Mez in Mart. Fl. Bras. 3, pt. 3: 235. 1891. Type: Schenck 2090. Nidularium purpureum sensu Wittm. Bot. Jahrb. 13, Beibl. 29: 10. 1891. In part, as to Schenck. Non Beer. Aregelia compacta (Mez) Mez in DC. Mon. Phan. 9: 73. 1896.
10. N. WILSONIANA M. B. Foster, Brom. Soc. Bull. 9: 83, figs. 1959. Type: Wilson 20.
11. N. ABENDROTHAE L. B. Smith, Brom. Soc. Bull. 10: 24, figs. 1960. Type: Abendroth 119. Pl. III, fig. 8: Sepal x 1.
12. N. HOEHNEANA L. B. Smith, Smithsonian Misc. Coll. 126: 28, 150, fig. 56. 1955. Type: Gehrt s. n. Pl. III, fig. 9: Sepal x 1.
13. N. PUNCTATISSIMA (Ruschi) Ruschi, Bol. Mus. Biol., Bot. no. 15: 2. 1954. Nidularium punctatissimum Ruschi, Bull. Mus. Nation. Hist. Nat. II. 26: 547, fig. 1954. Type: Ruschi s. n.
14. N. AMPULLACEA (E. Morr.) L. B. Smith, Contr. Gray Herb. 104: 78. 1934. Nidularium ampullaceum E. Morr. Belg. Hort. 30: 242. 1880; 35: 174, pl. 14. 1885. Type: Binot in Hort. Liège. Karatas ampullacea (E. Morr.) Baker, Handb. Bromel. 7. 1889. Regelia ampullacea (E. Morr.) Lindm. Oefvers. Vet. Akad. Förhandl. 47: 543. 1890. Aregelia ampullacea (E. Morr.) Mez in DC. Mon. Phan. 9: 64. 1896.
15. N. TIGRINA (Ruschi) Ruschi, Bol. Mus. Biol. Bot. no. 15: 2. 1954. Nidularium tigrinum Ruschi, Bull. Mus. Nation. Hist. Nat. II. 26: 544, fig. 1954. Type: Ruschi s. n.
16. N. RUBRIFOLIA Ruschi, Bol. Mus. Biol. Prof. Mello Leitão 15: 1, fig. 1954. Type: Ruschi s. n.
17. N. LEPROSA L. B. Smith, Smithsonian Misc. Coll. 126: 29, 150, fig. 57. 1955. Type: Foster 656. Pl. III, fig. 10: Sepal x 1.
18. N. TRISTIS (Beer) L. B. Smith, Proc. Amer. Acad. 70: 153. 1935. Bromelia tristis Beer, Brom. 30. 1857. Type: Hort. Berlin Billbergia purpurea Van Houtte ex Beer, l. c. Nomen. Nidularium triste (Beer) Regel, Gartenflora 15: 356. 1866. Nidularium cyan-eum Linden & André, Ill. Hort. 20: 184. 1873. Type: Hort. Linden Non Hort. Berlin. Karatas tristis (Beer) Baker, Handb. Brom. 5. 1889. Nidularium marmoratum hort. ex Baker, l. c. Nomen. Non E. Morr. Karatas cyanea (Linden & André) Baker, l. c. Nidularium elegans E. Morr. ex Baker, l. c. Nomen, based on Morr. Icon. Regelia tristis (Beer) Lindm. Oefvers. Vet. Akad. Förhandl. 47: 542. 1890. Aregelia tristis (Beer) Mez in DC. Mon. Phan. 9: 68. 1896. A. elegans Mez, op. c. 69 (not a combination on Nidularium elegans E. Morr. ex Baker, because that was a nomen). Type: Morren Icon.

19. *N. FLUMINENSIS* L. B. Smith, Smithsonian Misc. Coll. 126: 27, 150, fig. 58. 1955. Type: Foster 982. Pl. III, fig. 11: Sepal x 1.

20. *N. SIMULANS* L. B. Smith, sp. nov. A *N. fluminensis* L. B. Smith, cui affinis, sepalis valde asymmetricis obtusisque differt
 PLANT known only from fragments. LEAVES uniform (! A. Seidel) to 24 cm long, covered on both sides with appressed cinereous brown-centered scales; sheaths broadly elliptic, 7 cm long, tinged with purple; blades ligulate, narrowly rounded and apiculate, 2 cm wide, regularly white-banded beneath, laxly serrulate with antrorse brown spines 1 mm long. SCAPE 4 cm long; scape-bracts imbricate, broadly ovate, acuminate, membranaceous, white, sparsely and finely brown-lepidote, the upper involucrate about the inflorescence, elliptic, rounded, nearly equaling the sepals, entire. INFLORESCENCE simple, few-flowered, 3 cm in diameter; floral bracts like the upper scape-bracts but narrower, equaling $3/4$ of the sepals; pedicels distinct, slender, 10 mm long. SEPALS very strongly asymmetric with a broad wing, obtuse, 13 mm long, connate for 2 mm. OVARY ellipsoid, 9 mm long. Pl. III, fig. 12: Sepal x 1.

BRAZIL: Espirito Santo: Morro Pinga Fogo, between Castelo and Fruteira, 29 November 1962, A. Seidel 62-8 (HBR, type).

21. *N. CHLOROSTICTA* (Baker) L. B. Smith, Phytologia 10: 486. 1964. Karatas chlorosticta Baker, Handb. Brom. 7. 1889. Nidularium chlorosticta E. Morr. ex Baker, l. c. Nomen. Billbergia chlorosticta hort. ex Baker, l. c. Nomen. Regelia chlorosticta (Baker) Lindm. Oefvers. Vet. Akad. Förhandl. 47: 543. 1890. Are-gelia chlorosticta (Baker) Mez in DC. Mon. Phan. 9: 65. 1896. Neoregelia sarmentosa (Regel) L. B. Smith var. chlorosticta (Baker) L. B. Smith, Contr. Gray Herb. 104: 79. 1934. Neoregelia marmorata L. B. Smith, op. c. 124: 10. 1939; Smithsonian Misc. Coll. 126: 157. 1955. In part, as to material cited. Neoregelia chlorosticta Fritz Encke, Pareys Blumengärtnererei 1: 206. 1958. Nomen. Erroneously attributed to L. B. Smith. Pl. III, fig. 13: Sepal x 1 (after Morren Icon).

22. *N. MACULATA* L. B. Smith, sp. nov. A *N. sarmentosa* (Regel) L. B. Smith, cui verisimiliter affinis, foliorum laminis minute purpureo-maculatis apice plicatis differt.

PLANT stoloniferous. LEAVES about 8 in a narrowly obconical rosette, to 26 cm long; sheaths broadly elliptic, 8 cm long, castaneous-lepidote; blades ligulate, rounded and apiculate, to 23 mm wide, covered beneath with appressed cinereous brown-centered scales, glabrous above and finely purple-spotted, subentire. SCAPE 45 mm long; scape-bracts imbricate, the upper ones involucrate about the inflorescence, elliptic, rounded, exceeding the center of the sepal, membranaceous, purple apically, subdensely brown-lepidote, entire. INFLORESCENCE simple, few-flowered, ca 2 cm in diameter; floral bracts like the upper scape-bracts but narrow; pedicels slender, distinct, to 4 mm long SEPALS asymmetric, broadly acute or obtuse, 16 mm long, connate for 3 mm. PETALS white (DeLeon). OVARY narrowly ellipsoid, 9 mm long. Pl. III, fig. 14: Sepal x 1.

BRAZIL: Cultivated, 19 June 1962, N. J. DeLeon P-109 (US, type). Fragmentary, but probably the same is: Rio de Janeiro: Litoral, 6 January 1965, L. Seidel 1 (HBR).

23. N. DOERINGIANA L. B. Smith, Phytologia 7: 176, pl. 2, fig. 10-12. 1960. Type: Doering 7. Pl. III, fig. 15: Apex of leaf x 1; fig. 16: Sepal x 1.

24. N. CYANEA (Beer) L. B. Smith, Contr. Gray Herb. 124: 9. 1939. Hoplophytum cyaneum Beer, Brom. 131. 1857. Type: Hort. Berlin. Nidularium cyaneum Hort. Berlin ex Beer, l. c. Nomen. Non Linden & André. Bromelia denticulata K. Koch, Wochenschr. 2: 151. 1859. Type: Hort. Berlin. Billbergia angustifolia K. Koch, Wochenschr. 9: 181. 1866. Bromelia pauciflora K. Koch, l. c. Type: Hort. Berlin. Nidularium denticulatum (K. Koch) Regel, Gartenflora 19: 268. 1870. Karatas denticulata (Regel) Baker, Handb. Brom. 4. 1889. Bromelia angustifolia Baker, Handb. Brom. 4. 1889. Nomen. Wrongly attributed to K. Koch. Nidularium agavifolium hort. ex Baker, l. c. Nomen. Regelia denticulata (K. Koch) Lindm. Oefvers. Vet. Akad. Förhandl. 47: 542. 1890. Arege- lia cyanea (Beer) Mez in DC. Mon. Phan. 9: 67. 1896. Pl. III, fig. 17: Apex of leaf x 1.

25. N. SARMENTOSA (Regel) L. B. Smith, Contr. Gray Herb. 104: 79. 1934. Nidularium sarmentosum Regel, Gartenflora 19: 268. 1870. Type: Hort. Petrograd ex Hort. Berlin. Aechmea immersa hort. ex Regel, l. c. Nomen. Nidularium denticulatum var. simplex Wawra, Oesterr. Bot. Zeitschr. 30: 112. 1880; Bull. Féder. Soc. Hort. Belg. 35. 1880. Karatas sarmentosa (Regel) Baker, Handb. Brom. 5. 1889. Regelia sarmentosa (Regel) Lindm. Oefvers. Vet. Akad. Förhandl. 47: 542. 1890. Arege- lia sarmentosa (Regel) Mez in DC. Mon. Phan. 9: 66. 1896. Pl. III, fig. 18: Leaf-margin x 1.

26. N. MACAHENSIS (Ule) L. B. Smith, Contr. Gray Herb. 124: 9. 1939. Nidularium macahense Ule, Bericht. Deutsch. Bot. Gesellsch 18: 318. 1900. Type: Ule 4960. Arege- lia macahensis (Ule) Mez, Pflanzenreich IV. 32: 45. 1934.

27. N. ALBIFLORA L. B. Smith, Arquiv. Bot. Estado S. Paulo n. ser. 1: 109, pl. 113. 1943. Type: Foster 309. Pl. III, fig. 19: Sepal x 1 (after Hoehne).

28. N. LAEVIS (Mez) L. B. Smith, Contr. Gray Herb. 104: 78. 1934. Arege- lia laevis Mez, Ind. Sem. Hort. Regimont. 1912: 8. 1912; Fedde Rep. Spec. Nov. 12: 411. 1913. Type: E. Müller in Hort. Regimont. Karatas candida Hort. Paris ex Mez, l. c. Nomen. Pl. III, fig. 20: Sepal x 1.

29. N. BREVIFOLIA L. B. Smith & Reitz, sp. nov. A N. laeve (Mez) L. B. Smith, cui verisimiliter affinis, pedicellis manifestis longioribus, ovariis crassis differt.

PLANT stoloniferous. LEAVES more than 30 in abroadly obconic rosette, to 23 cm long, sparsely and obscurely lepidote beneath; sheaths broadly elliptic, 9 cm long; blades ligulate, broadly rounded and apiculate, to 28 mm wide, sparsely and obscurely serrulate. SCAPE 3 cm long; upper scape-bracts involucrate about the inflorescence, slightly exceeding the ovaries, broadly elliptic, membranaceous, pale. INFLORESCENCE simple, few-flowered, ca

2 cm in diameter; floral bracts like the upper scape-bracts but narrower, entire; pedicels distinct, to 10 mm long. SEPALS slightly asymmetric, obtuse, 12 mm long, connate for 4 mm, apically red-purple (! A. Seidel). PETALS 23 mm long, connate for 2 mm, the upper 2/3 blue (! A. Seidel). OVARY ellipsoid, 6 mm long. Pl. III, fig. 21: Sepal x 1.

30. N. JOHANNIS (Carr.) L. B. Smith, Smithsonian Misc. Coll. 126: 28. 1955. Nidularium johannis Carr. Rev. Hort. 56: 432. 1884. Type: Hort. Sallier. Karatas johannis (Carr.) Baker, Handb. Brom. 11. 1889. Regelia johannis (Carr.) Lindm. Oefvers. Vet. Akad. Förhandl. 47: 543. 1890. Aregelia johannis (Carr.) Mez in DC. Mon. Phan. 9: 84. 1896.

31. N. MARMORATA (Baker) L. B. Smith, Contr. Gray Herb. 124: 10. 1939. Nidularium laurentii var. elatius Regel, Gartenflora 34: 243. 1885. Type: Glaziou in Hort. Petrograd. Karatas marmorata Baker, Handb. Brom. 11. 1889. Type: Morren Icon. Nidularium marmoratum E. Morr. ex Baker, l. c.

Nomen. Bromelia marmorata Brongn. ex Baker, l. c. Nomen. Aregelia marmorata (Baker) Mez in DC. Mon. Phan. 9: 76. 1896. Pl. III, fig. 22: Sepal x 1 (after Morren Icon).

32. N. MAGDALENAE L. B. Smith & Reitz, sp. nov. A N. marmorata (Baker) L. B. Smith, cui affinis, foliorum vaginis minute atro-maculatis, laminis multo angustioribus differt.

PLANT known only from fragments. LEAVES 4 dm long; sheaths broadly elliptic, 14 cm long, densely and finely spotted with red purple on a pale green ground, subdensely appressed-lepidote; blades ligulate, 3 cm wide, sparsely and obscurely lepidote on both sides, laxly serrulate with antrorsely curved brown spines 1 mm long. SCAPE 4 cm long; upper scape-bracts involucrate about the inflorescence, broadly ovate, equaling the middle of the sepal or higher. INFLORESCENCE variable; floral bracts lanceolate, slightly exceeded by the sepals, entire; pedicels distinct, slender. SEPALS lanceolate, acuminate, short-connate.

Var. MAGDALENAE. Inflorescentia multiflora, pedicellis sepalisque majoribus.

INFLORESCENCE many-flowered; pedicels to 25 mm long. SEPALS 34 mm long, connate for 4 mm. Pl. III, fig. 23: Sepal x 1.

BRAZIL: Rio de Janeiro: Madalena, 13 December 1964, Reitz 6814 (HBR, type).

Var. TERESAE L. B. Smith & Reitz, var. nov. A var. magdalenae inflorescentia pauciflora, pedicellis sepalisque minoribus differt, sed foliis omnino similibus.

INFLORESCENCE few-flowered; pedicels to 15 mm long. SEPALS 28 mm long.

BRAZIL: Espirito Santo: Santa Teresa, 2 November 1962, A. Seidel 501 (HBR, type).

33. N. ZONATA L. B. Smith, Arquiv. Bot. Estado S. Paulo n. ser 2: 120, pl. 51. 1950. Type: Foster 197. Pl. III, fig. 24: Sepal x 1 (after Hoehne).

34. N. MELANODONTA L. B. Smith, Smithsonian Misc. Coll. 126: 30, 155, fig. 66. 1955. Type: Foster 897. Pl. III, fig. 25: Apex of leaf x 1/4; fig. 26: Sepal x 1.

35. N. KUHLMANNII L. B. Smith, Smithsonian Misc. Coll. 126: 28, 152, fig. 60. 1955. Type: M. Kuhlmann 2652. Pl. III, fig. 27: Sepal x 1.
36. N. BAHIANA (Ule) L. B. Smith, Proc. Amer. Acad. 70: 152. 1935.
 Forma BAHIANA. Nidularium bahianum Ule, Bot. Jahrb. 42: 195. 1908. Type: Ule 7105. Aregelia bahiana (Ule) Mez, Pflanzenreich IV. 32: 42. 1934. All or at least the inner leaves purple on the upper surface.
- Forma VIRIDIS (L. B. Smith) L. B. Smith, comb. nov. N. bahiana var. viridis L. B. Smith, Smithsonian Misc. Coll. 126: 27, 148. 1955. Type: Foster 573.
37. N. OLIGANTHA L. B. Smith, Smithsonian Misc. Coll. 126: 30, 153, fig. 62. 1955. Type: Foster 742. Pl. III, fig. 28: Sepal x 1.
38. N. PAUCIFLORA L. B. Smith, Smithsonian Misc. Coll. 126: 31, 155, fig. 65. 1955. Type: Foster 265. Pl. III, fig. 29: Sepal x 1.
39. N. BINOTII (Ant.) L. B. Smith, Contr. Gray Herb. 114: 5. 1936. Karatas binotii Ant. Phyto-Icon. pl. 34. 1884. Nidularium binotii E. Morr. ex Baker, Handb. Brom. 12. 1889. Nomen. Regelia binotii (Ant.) Lindm. Oefvers. Vet. Akad. Förhandl. 47: 543. 1890. Aregelia binotii (Ant.) Mez in DC. Mon. Phan. 9: 82. 1896. Pl. III, fig. 30: Flower and bract x 1 (after Antoine).
40. N. SPECTABILIS (Moore) L. B. Smith, Contr. Gray Herb. 104: 79. 1934. Nidularium spectabile Moore, Gard. Chron. 8. 1873. Type: Hort. Bull. Karatas spectabilis Ant. Phyto-Icon. pl. 33. 1884. Type: Plate, probably intended as a new combination but no text. Nidularium eximium hort. ex Baker, Handb. Brom. 11. 1889. Nomen. Regelia spectabilis (Moore) Lindm. Oefvers. Vet. Akad. Förhandl. 47: 543. 1890. Aregelia spectabilis (Moore) Mez in DC. Mon. Phan. 9: 70. 1896. Pl. III, fig. 31: Flower and bract x 1. (after Antoine).
41. N. SEIDELIANA L. B. Smith & Reitz, Phytologia 10: 486, pl. 2, fig. 10, 11. 1964. Type: A. Seidel s. n. Pl. III, fig. 32: Sepal x 1.
42. N. LEUCOPHOEA (Baker) L. B. Smith, Contr. Gray Herb. 124: 9. 1939. Karatas leucophoea Baker, Handb. Brom. 7. 1889. Type: Morren Icon. Nidularium leucophoeum E. Morr. ex Baker, l. c. Nomen. Andrea spectabilis hort. ex Baker, l. c. Nomen. Aregelia leucophoea (Baker) Mez in DC. Mon. Phan. 9: 77. 1896.
43. N. ULEANA L. B. Smith, Smithsonian Misc. Coll. 126: 31, 152, fig. 59. 1955. Pl. III, fig. 33: Sepal x 1.
44. N. CARCHARODON (Baker) L. B. Smith, Proc. Amer. Acad. 70: 152. 1935. Karatas carcharodon Baker, Handb. Brom. 12. 1889. Type: Morren Icon. Nidularium carcharodon E. Morr. ex Baker, l. c. Nomen. Karatas macracantha Baker, l. c. Nomen. Aregelia carcharodon (Baker) Mez in DC. Mon. Phan. 9: 78. 1896.
45. N. CRUENTA (R. Graham) L. B. Smith, Contr. Gray Herb. 124: 9. 1939. Bromelia cruenta R. Graham, Edinburg Phil. Journ. 174. 1828. Type: Harris in Hort. Edinburg. Billbergia cruenta (R. Graham) Hook. in Bot. Mag. 54: pl. 2892. 1829. Nidularium

cruentum (R. Graham) Regel, Gartenflora 8: 267. 1859. N. laurentii var. immaculatum Regel, Gartenflora 34: 243. 1885. Type: Hort. Petrograd. Karatas cruenta (R. Graham) Nicholson, Dict. Gard. 2: 216. 1885. Regelia cruenta (R. Graham) Lindm. Oefvers. Vet. Akad. Förhandl. 47: 543. 1890. (combination not made by Lem. in 1860 as cited by Mez). Nidularium longibracteatum Mez in Mart. Fl. Bras. 3, pt. 3: 239. 1891. Type: Rudio 103. Aregelia cruenta (R. Graham) Mez in DC. Mon. Phan. 9: 71. 1896. A. longibracteata (Mez) Mez, op. c. 79. A. rubrospinosa Mez, Fedde Rep. Spec. Nov. 12: 412. 1913. Type: Hort. Regimont. Neoregelia longibracteata (Mez) L. B. Smith, Contr. Gray Herb. 124: 9. 1939 N. rubrospinosa (Mez) L. B. Smith, op. c. 10. Pl. III, fig. 34: Flower without pedicel x 1 (after Botanical Magazine).

46. N. CORIACEA (Ant.) L. B. Smith, Smithsonian Misc. Coll. 126: 27, 152. 1955. Karatas coriacea Ant. Phyto-Icon. 51, pl. 30, fig. 1. 1884. Type: Description and plate. Nidularium coriaceum Hort. Linden ex Ant. 1. c. Nomen. Regelia coriacea (Ant.) Lindm. Oefvers. Vet. Akad. Förhandl. 47: 543. 1890.

47. N. CONCENTRICA (Vell.) L. B. Smith, Contr. Gray Herb. 104: 78. 1934. Tillandsia concentrica Vell. Fl. Flum. 134. 1825; Icon. 3: pl. 133. 1835. Type: Description and plate. Bromelia concentrica (Vell.) Beer, Brom. 29. 1857. Nidularium laurentii Regel, Ind. Sem. Hort. Petrop. 1866: 80. 1867. Type: Libon in Hort. Laurent. Billbergia aurantiaca Hort. Laurent ex Regel, 1. c. Nomen. Nidularium acanthocrater E. Morr. Belg. Hort. 34: 140 pl. 9. 1884. Type: Hort. Makoy. Karatas laurentii (Regel) Ant. Phyto-Icon. 48, pl. 28. 1884. K. acanthocrater (E. Morr.) Ant. op. c. 49, pl. 29, 30, fig. 2. Nidularium laurentii Regel var. typica Regel, Gartenflora 34: 243. 1885. Regelia acanthocrater (E. Morr.) Lindm. Oefvers. Vet. Akad. Förhandl. 47: 543. 1890. R. laurentii (Regel) Lindm. 1. c. Nidularium concentricum (Vell.) Mez in Mart. Fl. Bras. 3, pt. 3: 239. 1891. Aregelia laurentii (Regel) Mez in DC. Mon. Phan. 9: 80. 1896. A. concentrica (Vell.) Mez, op. c. 81. Pl. III, fig. 35: Flower and bract x 1 (after Antoine).

Subgenus AMAZONICAE

NEOREGELIA subgenus AMAZONICAE, subgen. nov. A subgenere Neoregelia petalis liberis, pedicellis ex ovario vix distinctis differt. Type: N. eleutheropetala (Ule) L. B. Smith (Nidularium eleutheropetalum Ule).

For revision of species cf. Phytologia 9: 242. 1963.

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TILLANDSIA concentrica 47.

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APPENDIX
(Doubtful taxa)

Neoregelia makoyana (Regel) L. B. Smith, Contr. Gray Herb. 124 10. 1939. Nidularium makoyanum Regel, Gartenflora 36: 656. 1887. Type: Hort. Petrograd. Karatas makoyana (Regel) Baker, Handb. Brom. 11. 1889. Nidularium sanguinarium hort. ex Baker, op. c. 12 (fide Mez). Regelia makoyana (Regel) Lindm. Oefvers. Vet. Akad. Förhandl. 47: 543. 1890. Aregelia makoyana (Regel) Mez, Pflanzenreich IV. 32: 50. 1934. In part, as to basonym.

Evidently the plant described under Aregelia makoyana by Mez from material from Paris is not the same as Regel's Nidularium makoyanum. Regel emphasizes the red apical spot on the leaf and describes the petal-apex as pale violet. Mez makes no mention of any red apical spot on the leaf and keys the species out on its pale red flowers although in the description he calls them pale violet. I suspect that Regel's plant is conspecific with Neoregelia binotii and that Mez's may be an undescribed species.

Neoregelia species? Nidularium caeruleum Lem. Ill. Hort. 7: sub pl. 245. 1860. Tillandsia caerulea hort. ex Lem. l. c. Nomen. Caraguata caerulea hort. ex Lem. l. c. Nomen. Billbergia caerulea hort. ex Lem. l. c. Nomen. Regelia caerulea Lem. ex Jackson, Ind. Kew. 4: 694. 1895. Nomen. Not Lem. above, as he indicated only a provisional status for Regelia.

Although Lemaire's Regelia was only a provisional name, his recognition of generic characters makes it likely that Nidularium caeruleum is some species of Neoregelia. Further than that it is not possible to go until authentic material is discovered.

OCHAGAVIA

OCHAGAVIA CARNEA (Beer) Smith & Looser, Revista Universitaria Chile 18, no. 8: 1078, 1080. 1934. Bromelia lindleyana Lem. Jard. Fleur. 3: sub pl. 223. 1853. Nomen provis. B. longifolia sensu Lindl. in Paxton, Fl. Gard. 2: pl. 65. 1851. Based on plate. Non Rudge 1805. Bromelia carnea Beer, Brom. 31. 1857. Nomen nov. for B. longifolia sensu Lindl. Ochagavia lindleyana Mez, Pflanzenreich IV. 32: 204. 1935 (Not a new combination as intended, because based on a nomen). Placseptalia rebecca Espinosa, Bol. Mus. Nac. Hist. Nat. Chile 23: 8, pl. 1-6. 1947. Type: Espinosa s. n.

ORTHOPHYTIUM

ORTHOPHYTIUM SAXICOLA (Ule) L. B. Smith var. ALOIFOLIA L. B. Smith, var. nov. Cryptanthopsis aloifolia O. Schwartz, nomen. A var. saxicola scapi vaginis supremis elongatis inflorescentiam multo superantibus differt.

BRAZIL: Cultivated, 18 March 1939, Bot. Gart. Hamburg, 1957, Oeser (HBG, type); cultivated, 1 March 1966, Bot. Gart. Berlin (B).

Although I generally avoid the publication of nomina nuda,

there are times when it seems desirable as a clarification of names current in horticulture.

PITCAIRNIA

(Supplement to Revision in Phytologia 10: 1. 1964,
species alphabetical)

118a. *P. ABUNDANS* L. B. Smith, Phytologia 10: 483, pl. 2, fig. 1, 2. 1964.

As already noted, this belongs with *P. aequatorialis* L. B. Smith, differing in its tuberculate rhachis, spreading flowers and costate ovary.

74a. *P. ELLENBERGII* L. B. Smith, sp. nov. *P. cuzcoensis* L. B. Smith in systema mea proxima sed ramis longioribus crassioribusque, pedicellis quam bracteis florigeris multo brevioribus differt.

PLANT flowering over 1 m high. LEAVES polymorphic, the outermost reduced to small suborbicular castaneous sheaths with short linear blades, the median with elongate sheaths and long linear spinose-serrate blades, the innermost subpetiolate, ca 1 m long, the blade linear-lanceolate, acuminate, 3 cm wide, very sparsely and obscurely serrate, covered beneath with a membrane of white scales, glabrous above, bearing a broad median whitish channel. SCAPE erect, 7 mm thick, white-flocculose; scape-bracts narrowly triangular, entire, the lower long-caudate, the upper merely acuminate, shorter than the internodes. INFLORESCENCE laxly bipinnate, 4 dm long, finely white-flocculose except the petals; axes stout; primary bracts like the upper scape-bracts, much exceeding the very short sterile bases of the branches but several times shorter than the branches themselves; floral bracts broadly elliptic, apiculate, to 15 mm long, entire, thin; pedicels spreading, slender, not over 6 mm long. SEPALS linear-lanceolate, acute, 22 mm long, ecarinate. PETALS 5 cm long, naked, red, exceeding the stamens. OVARY almost wholly superior; ovules caudate. Pl. III, fig. 36: Flower and bract x 1; fig. 37: Sepal x 1.

PERU: Cuzco: Moist Bromeliad mass at edge of rock wall, (association 86), Mandor, below Machupicchu, alt. 2000 m, 13 April 1957, H. Ellenberg 993 (U, type; phot. US).

256. *P. FLAMMEA* Lindl. var. *MACROPODA* L. B. Smith & Reitz, var. nov. A var. *floccosa* L. B. Smith, cujus inflorescentiae squamas simulans, pedicellis maximis bracteas florigeras parvas valde superantibus differt.

LEAVES 8 mm wide, bearing linear reddish scales beneath when young. INFLORESCENCE lax, 18 cm long, floccose; floral bracts linear-triangular, to 18 mm long; pedicels ascending, slender, to 35 mm long. SEPALS linear-lanceolate, ecarinate, acute, 22 mm long.

BRAZIL: Minas Gerais: Mun. Tombos: Locally rather frequent on ledges, Alto da Usina, ca 20° 54' S, 42° 02' W, 8 April 1950, M. Magalhães s. n. (Hb. Bradeanum, type; phot. US).

209a. *P. FLAVESCENTIA* Matuda, An. Inst. Biol. Univ. Nac. Aut. Mexico 36: 110, fig. 5. 1965.

MEXICO: Guerrero: Rocky slope, on crystalline rocks, in medium deciduous woods, in partial shade of Bursera, Rincón de la Vía, alt. 800 m, 3 September 1961, H. Kruse 464 (MEXU, type; Hb. Kruse isotype; no material yet examined).

In my key this comes to subkey VI, lead 25 (1) and immediately differs from P. leprosa L. B. Smith, P. flammea Lindl. and P. andrea Linden by its very broad leaf-blades (60-65 mm). Except for the lack of a distinct petiole it looks more like P. chiapensis Miranda.

30a. P. IRWINIANA L. B. Smith, *Phytologia* 13: 153, pl. 7, fig. 20-22. 1966.

As indicated, this keys to subkey III, lead 12, and is there distinguished by its alate sepals.

210a. P. LANOSISEPALA Matuda, *An. Inst. Biol. Univ. Nac. Aut. Mexico* 36: 111, fig. 6. 1965.

MEXICO: Guerrero: On large rocks, in shade of Quercus macrophylla woods, Rincón Viejo, alt. 800 m, 12 August 1962, H. Kruse 809 (MEXU, type; no material yet examined).

This is very closely related to P. modesta L. B. Smith, differing only in sepals maximally 30 mm long instead of 35 mm and in the white rather than ferruginous indument of the inflorescence.

60, 169. P. LANUGINOSA R. & P. *Fl. Peruv.* 3: 35, pl. 258. 1802
Type: Ruiz & Pavon. P. subpetiolata Baker, *Journ. Bot.* 19: 267. 1881. Type: Spruce s. n.

Examination of the type of Pitcairnia lanuginosa R. & P. in the Instituto "Antonio José Cavanilles" in Madrid has shown that there is no specific difference between it and the later P. subpetiolata Baker, which has been collected widely in northern South America. In my key, before seeing the type of P. lanuginosa, I had separated them on the amount of serration of the leaves (page 22, lead 29), but the species varies enough to cover both I now realize. The flowers, on the other hand, are unique and quite constant.

31. P. LIMAE L. B. Smith, *Phytologia* 7: 254, pl. 1, fig. 9, 10. 1960; emend.:

LEAVES many, all alike; sheaths broadly ovate, 3 dm long, dark castaneous; blades persistent, linear, long-attenuate, scarcely contracted at base, 18 mm wide, densely cinereous-lepidote beneath, soon glabrous above, laxly spinose-serrate at base, entire elsewhere.

BRAZIL: Ceará: Topotype, Ducke s. n. (MG 1661).

In the absence of leaves, I mistakenly entered P. limae with the deciduous leaves and with the persistent entire ones, but failed to cover what proves to be the real case, namely persistent partially serrate ones. Consequently the positions under subkey III, lead 37 (1), and subkey VI, lead 15 (1), should be deleted, and P. limae should be entered in subkey V, after lead 48 (1), differing from P. latifolia Ait. in its broad serrulate lower floral bracts.

241, 242. P. SPICATA (Lam.) Mez in DC. *Mon. Phan.* 9: 392. 1896, as to basonym, not as to description; L. B. Smith,

Phytologia 10: 44. 1964, and earlier publications.

Forma a. SPICATA. Bromelia foliis radicalibus brevibus & aculeatis, caulinis longissimis & integerrimis, inermibus Plum. Pl. Amer. ed. Burm. 52, pl. 63. 1755-60. Bromelia spicata Lam. Encycl. 1: 146. 1789. Type: Plumier s. n. Pitcairnia albucifolia Schrad. Blumenbl. 24. 1827. Type: Description, no specimen cited Bracteis florigeris lineari-lanceolatis.

Examination of Plumier material verifies the indication of his plate that Pitcairnia spicata is the form with narrow floral bracts and in no wise different from P. albucifolia Schrad. that Mez separated on this character. This leaves the broad-bracted form, called P. spicata by Mez, without a name, and the earliest specific name would have to be P. sulphurea Andrews, a rather unfortunate outcome because of the color implication. However, the distinctions given by Mez prove very fluid and without geographical significance, so that they are not even of varietal value. Furthermore, the color variation from the usual red petal to a yellow one can occur within a clone. Accordingly, I am making a fresh start by describing new forms and assigning the older names of other categories as synonyms as is possible under the International Code.

Forma b. LATIOR L. B. Smith, forma nov. A forma spicata bracteas florigeras latioribus, lanceolatis vel ovatis differt. Type: R. A. Howard 11945.

Pitcairnia latifolia Redouté, Lil. pl. 74. 1804, non Ait. 1789 P. bracteata α. Ait. Hort. Kew. ed. 2, 2: 202. 1811. P. spicata Mez in DC. Mon. Phan. 9: 392. 1896, as to description, not as to basonym; L. B. Smith, Phytologia 10: 44. 1964.

ST. KITTS: In the water and on the margins of Dos d'Ans (Dodans) Pond, 19-24 June 1950, R. A. Howard 11945 (US, type).

Forma c. PALLIDA L. B. Smith, forma nov. A forma spicata bracteas florigeras ovatis vel lanceolatis, a forma latior petalis sulfureis vel albis differt. Type: C. V. Morton 5252.

Pitcairnia sulphurea Andr. Bot. Repos. 4: pl. 249. 1802. P. spicata var. sulphurea Mez in DC. Mon. Phan. 9: 393. 1896.

ST. VINCENT: Mountains above Chateaubelair River, alt. 400-750 m, 23 April 1947, C. V. Morton 5252 (US, type).

RONNBERGIA

RONNBERGIA HATHEWAYI L. B. Smith, sp. nov. A R. killipiana L. B. Smith, cui valde affinis, foliis subpetiolatis integerrimis, sepalis subduplo minoribus differt.

PLANT stoloniferous, known only from fruiting material.

LEAVES few, fasciculate, to 7 dm long, much exceeding the inflorescence, entire, pale-lepidote beneath; sheaths narrowly triangular; blades linear-lanceolate, acuminate, subpetiolate to 35 mm wide, thin, channeled. SCAPE curved, 2 mm thick, glabrous in age scape-bracts imbricate, lanceolate, acuminate, green, thin. INFLORESCENCE simple, subax, 4-5 cm long, glabrous with age; floral bracts suborbicular, 4 mm long; flowers spreading. SEPALS 4 mm long with a large suborbicular wing overtopping the apex,

unarmed, connate for 2 mm. FRUIT globose, 9 mm long, dark blue with numerous conspicuous pale ribs. Pl. III, fig. 38: Fruit x 1; fig. 39: Sepal x 1.

COSTA RICA: Cartago: In very wet complex forest of Chrysophyllum, Billia, Callophyllum, Vochysia, Mouriri, and Engelhardtia, Valle Escondido, between Tuis and Siquirres, alt. 800 m, 25 March 1966, W. H. Hatheway 1706 (US, type); same, 1707 (US).

STREPTOCALYX

STREPTOCALYX SUBNUDA L. B. Smith in R. E. Schultes, Bot. Mus. Leaflet. Harvard Univ. 17: 73, fig. 1955. S. holmesii J. Holmes, Brom. Soc. Bull. 15: 93 (color plate). 1965. Nomen.

PERU: Vicinity of Iquitos (?), Lee Moore s. n., cultivated January 1967, J. Marnier-Lapostolle 34 (US).

TILLANDSIA

TILLANDSIA FASCICULATA Sw. var. FLORIDANA L. B. Smith, var. nov. A var. fasciculata spicis pluribus minoribus, bracteis florigeris tenuiter coriaceis lepidotis differt.

INFLORESCENCE of several small spikes as in the common var. densispica Mez of Florida; floral bracts thin-coriaceous, lepidote.

UNITED STATES: Florida: Osceola County: Epiphytic on Taxodium, near Holopaw, alt. 15 m, 23 March 1953, M. B. Foster 2820 (US, type).

VRIESEA

VRIESEA DUBIA (L. B. Smith) L. B. Smith, comb. nov. Tillandsia dubia L. B. Smith, Phytologia 5: 284, pl. 2, fig. 4, 5. 1955; Brom. Colombia in Contr. U. S. Nat. Herb. 33: 133, fig. 38. 1957.

FLORAL BRACTS scarlet-red. PETALS white (!: Vogel), narrow, bearing 2 narrow acute highly adnate scales at base. STAMENS included.

COLOMBIA: Nariño: Epiphytic along trail north of Puerto Leguizamo, alt. 200 m, 22 November 1948, Jaramillo-Mejía 571 (COL, type; US phot.). Caquetá: Epiphytic in tropical rainforest, Florenzia, alt. 150 m, 16 April 1956, Stefan Vogel 3 (Mainz, US).

Thanks to the in vitro material of Professor Stefan Vogel of Mainz, it is now possible to confirm the suspicion that led me to give this species the name "dubia" in the first place. It has been keyed (subkey V, lead 17 (1)) already in my revision of Vriesea in Phytologia 13: 84. 1966.

Plate I

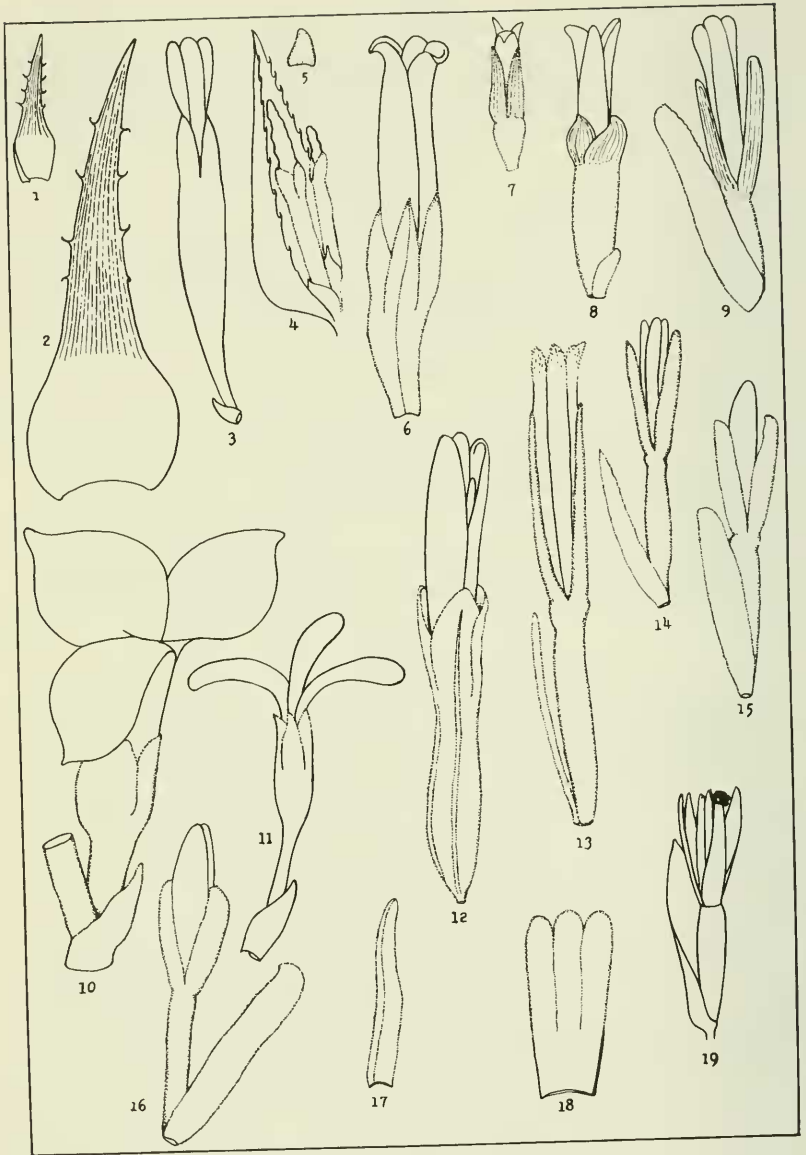


Fig. 1: *Abromeitiella brevipolia*. 2: *A. lorentziana*.
3-19: *Bromelia* species, cf. text.

Plate II

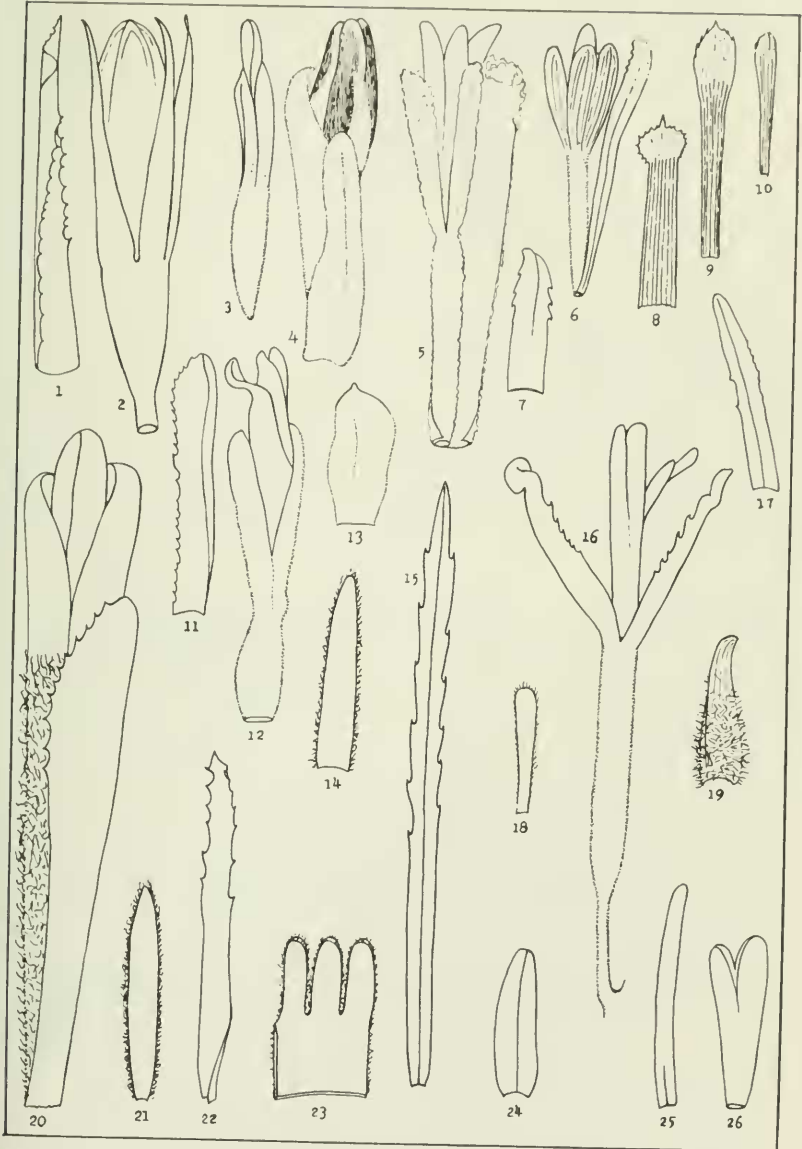


Fig. 1-26: Bromelia species, cf. text.

Plate III

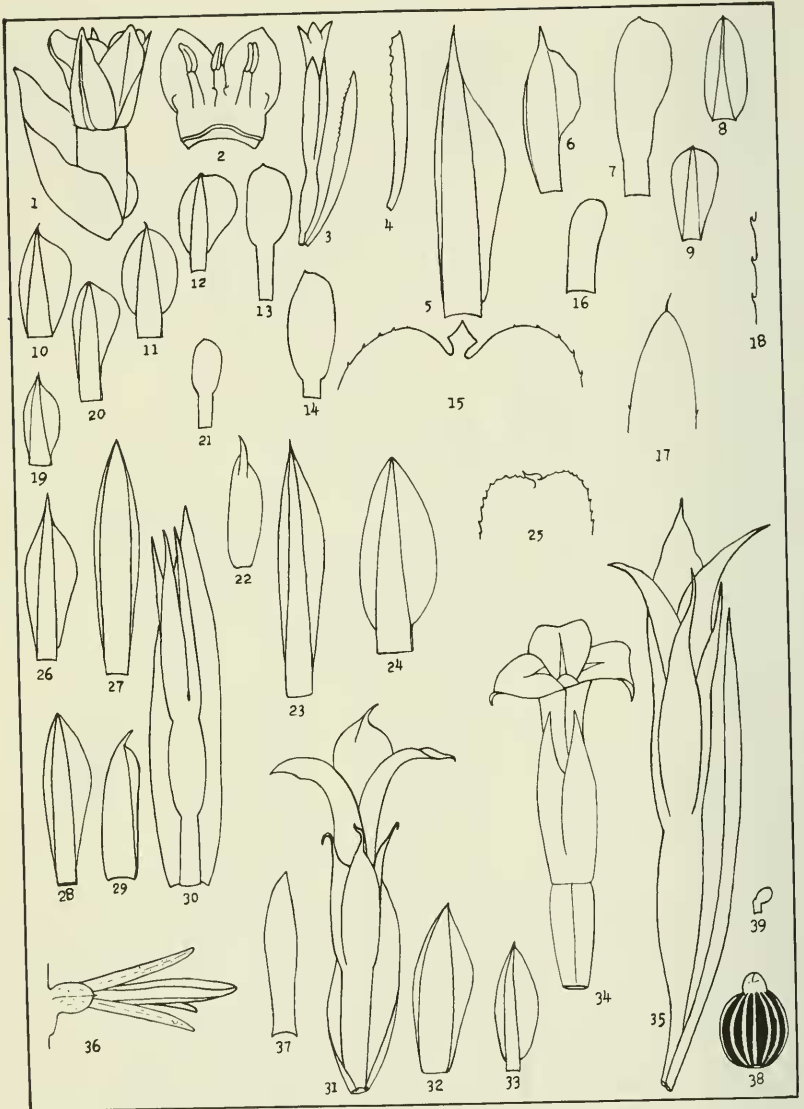


Fig. 1, 2: *Bromelia urbaniana*. 3-35: *Neoregelia* species, cf. text. 36, 37: *Pitcairnia ellenbergii*. 38, 39: *Ronnbergia hathewayi*.